

Reconstructing the Wine Industry of Byzantine Amorium

Production and Consumption of Wine in Central Asia Minor, Seventh to Ninth Centuries

NIKOS TSIVIKIS, THANASIS SOTIRIOU,
OLGA KARAGIORGOU, AND ILIAS ANAGNOSTAKIS

The production and consumption of wine in late antique and medieval Asia Minor is a subject that has recently attracted significant attention, despite the fact that Byzantine historical accounts on wine in the region are limited and have been extensively discussed.¹ The study of archaeological evidence has been dynamically evolving and largely setting the pace in the study of the field.² At the same time, the history and archaeology

of the region have been enriched by the rapidly developing study of the paleoenvironment, offering new insights in our understanding of the interplay between climate and agricultural production.³

The archaeological evidence connected with wine production unearthed in the systematic excavation of Amorium in central Asia Minor is of special importance in this discussion, as it offers a unique window into the relatively unknown conditions of wine making in Byzantine cities. The main aim of this paper is to combine archaeological material with historical information and environmental data and offer answers to questions on why Amorium developed into a wine-production center, how wine was produced in the city,

1 I. Anagnostakis, *Βυζαντινός οινικός πολιτισμός: Το παράδειγμα της Βιθυνίας/Wine Culture in Byzantium: The Bithynian Example* (Athens, 2008); I. Anagnostakis, “Noms de vignes et de raisins et techniques de vinification à Byzance: Continuité et rupture avec la viticulture de l’antiquité tardive,” *Food and History* 11 (2013): 35–59; M. Kaplan, “La viticulture byzantine (VII^e–XI^e siècles),” in *Olivo e vino nell’alto Medioevo: Atti delle LIV settimane di studio della Fondazione Centro italiano di studi sull’alto Medioevo, Spoleto, 20–26 aprile 2006* (Spoleto, 2007), 163–207, esp. 163–82; and I. Anagnostakis and T. Boulay, “Les grands vignobles bithyniens aux époques romaine et protobyzantine,” in *Propriétaires et citoyens dans l’Orient romain*, ed. F. Lerouxel and A.-V. Pont (Bordeaux, 2016), 25–49. For the continuing use of wine in Seljuk and Ottoman Anatolia, see B. Kitapçı Bayrı, *Warriors, Martyrs, and Dervishes: Moving Frontiers, Shifting Identities in the Land of Rome (13th–15th Centuries)* (Leiden, 2020), 85–88.

2 E. Dodd, “The Archaeology of Wine Production in Roman and Pre-Roman Italy,” *AJA* 126.3 (2022): 443–80; R. Frankel, *Wine and Oil Production in Antiquity in Israel and Other Mediterranean Countries* (Sheffield, 1999); J.-P. Brun, *Le vin et l’huile dans la Méditerranée antique: Viticulture, oléiculture et procédés de transformation* (Paris, 2003); Ü. Aydınoglu and A. K. Şenol, eds., *Antik çağda Anadolu’da zeytinyağı ve şarap üretimi: Sempozyum bildirileri, 06–08 Kasım 2008, Mersin, Türkiye/Olive Oil and Wine Production in Anatolia during Antiquity: Symposium Proceedings, 06–08 November 2008, Mersin, Turkey* (Istanbul, 2010); A. Diler, A. K. Şenol, and Ü. Aydınoglu,

eds., *Olive Oil and Wine Production in Eastern Mediterranean during Antiquity: International Symposium Proceedings 17–19 November 2011 Urla - Turkey/Antikçağ’da Doğu Akdeniz’de zeytinyağı ve şarap üretimi: Uluslararası sempozyum bildirileri 17–19 Kasım 2011 Urla - İzmir* (Izmir, 2015); and E. K. Dodd, *Roman and Late Antique Wine Production in the Eastern Mediterranean: A Comparative Archaeological Study at Antiochia ad Cragum (Turkey) and Delos (Greece)* (Oxford, 2020).

3 A. Izdebski, *A Rural Economy in Transition: Asia Minor from Late Antiquity into the Early Middle Ages* (Warsaw, 2013); J. Haldon et al., “The Climate and Environment of Byzantine Anatolia: Integrating Science, History, and Archaeology,” *Journal of Interdisciplinary History* 45.2 (2014): 113–61; and J. Haldon, “Remarks on History, Environment, and Climate in Byzantine Anatolia: Comments on a Complex Landscape,” in *Space and Communities in Byzantine Anatolia: Papers from the Fifth International Sevgi Gönül Byzantine Studies Symposium*, ed. N. D. Kontogiannis and B. T. Uyar (Istanbul, 2021), 3–17.

and who were its consumers. Hence, through a multi-disciplinary approach, we attempt to set the phenomenon in its historical setting and offer a basic outline of wine production and consumption in central Asia Minor between the seventh and ninth centuries.

State of Research

Inland Asia Minor has been traditionally portrayed as suitable mainly for animal husbandry, cereal agriculture, and stock raising, in contrast to the coastal zones, featuring cereal crops, vineyards, and olive groves, the basis for the Mediterranean triad.⁴ Therefore, the central parts of Anatolia were not considered in relevant traditional scholarship among the places where wine was systematically produced.⁵ Up to a point, this picture relies on the difficulties that the local landscape poses to viticulture, but mostly on Byzantine textual sources reproducing the perception of a *wineless plateau*. Among the most often quoted ones are the letters sent out by Leo, the tenth-century metropolitan of Synada, who noted that “our land does not yield wine because of the high altitude and the short growing season,” and John Mauropous, the eleventh-century metropolitan of Euchaita, who lamented that “with regard to wine . . . the land is unfortunate owing to its utter poverty and want.”⁶ It is worth noting, however, that the underlying context is that both these two ecclesiastic intellectuals had left

Constantinople for their appointment to provincial Anatolian towns and, next to other troubles of country life, they also complained about the lack of wine in their dioceses.⁷ Such complaints, obviously meant to convey the strong nostalgia of the two prelates for the “civilized” way of life in Constantinople, must contain elements of exaggeration.⁸ This view is contrasted by the compelling Roman and Early Byzantine epigraphic and archaeological evidence indicating that parts of the plateau had been rich in viticulture and wine making already in earlier times.⁹ This evidence, which has not been systematically studied so far, needs to be revisited and added to a wealth of newly acquired data.¹⁰ These include numerous archaeological finds that have been published over the last two decades in connection with a renewed interest in wine making, especially during the early medieval and Middle Byzantine periods.¹¹ At the same time, new

4 M. F. Hendy, *Studies in the Byzantine Monetary Economy, c. 300–1450* (Cambridge, 1985), 138–45, 70, map 13.

5 J. Lefort, “The Rural Economy, Seventh–Twelfth Centuries,” in *The Economic History of Byzantium: From the Seventh through the Fifteenth Century*, ed. A. E. Laiou (Washington, DC, 2002), 234, 249. The opposite view has already been expressed in C. S. Lightfoot, “Excavations at Amorium: Results from the Last Ten Years (1998–2008),” in *Archaeology of the Countryside in Medieval Anatolia*, ed. T. Vorderstrasse and J. Roodenberg (Leiden, 2009), 142; C. S. Lightfoot, “Business as Usual? Archaeological Evidence for Byzantine Commercial Enterprise at Amorium in the Seventh to Eleventh Centuries,” in *Trade and Markets in Byzantium*, ed. C. Morrisson (Washington, DC, 2012), 177–91, at 182, n. 22; and C. S. Lightfoot, “City and Countryside in Byzantine Anatolia: Amorium,” in *Byzantium in Transition: The Byzantine Early Middle Ages, 7th–8th c. AD*, ed. A. K. Vionis (Nicosia, forthcoming).

6 Leo of Synada, *Correspondence*, no. 43 (M. P. Vinson, ed. and trans., *The Correspondence of Leo, Metropolitan of Synada and Syncellus*, CFHB 23 [Washington, DC, 1985], 68–71), and Ioannes Mauropous, *Letters*, no. 64 (A. Karpozilos, ed. and trans., *The Letters of Ioannes Mauropous, Metropolitan of Euchaita*, CFHB 34 [Thessaloniki, 1990], 173).

7 For Synada (modern Şuhut), see K. Belke, “Synada,” *TIB* 7:393–95. For Euchaita (modern Avkat), see J. Haldon, “Euchaita: From Late Roman and Byzantine Town to Ottoman Village,” in *Archaeology and Urban Settlement in Late Roman and Byzantine Anatolia: Euchaita-Avkat-Beyözü and Its Environment*, ed. J. Haldon, H. Elton, and J. Newhard (Cambridge, 2018), 210–54. See also Lightfoot, “Business as Usual?,” 184, n. 40.

8 John Mauropous considered his appointment to Euchaita an exile (Karpozilos, *The Letters of Ioannes Mauropous*, 17). Leo’s testimony is part of an epistle through which he protested to the emperor about the poverty of his metropolis (A. Kazhdan, *A History of Byzantine Literature [850–1000]*, ed. C. Angelidi [Athens, 2006], 293).

9 S. Mitchell, *Anatolia: Land, Men, and Gods in Asia Minor*, vol. 1, *The Celts in Anatolia and the Impact of Roman Rule* (Oxford, 1993), 146–47. For archaeological evidence of the region of Phrygia, which is the main focus of this article, see M. Waelkens, “Phrygian Votive and Tombstones as Sources of the Social and Economic Life in Roman Antiquity,” *Ancient Society* 8 (1977): 277–315, and T. T. Sivas, “Wine Presses of Western Phrygia,” *Ancient West & East* 2.1 (2003): 1–18.

10 In the seminal works of Frankel in the late 1990s on winepresses and wine production in antiquity, when offering an overview of the Mediterranean, the inland area of Asia Minor is shown as completely barren of relevant archaeological evidence; see Frankel, *Wine and Oil Production*, 170–74. In Andrea Zerbini’s 2015 bibliographical overview of late antique wine and olive oil production and its economy in Asia Minor, only a single study by Stephen Mitchell on olive oil is presented: A. Zerbini, “The Late Antique Economy: Primary and Secondary Production,” in *Local Economies? Production and Exchange of Inland Regions in Late Antiquities*, ed. L. Lavan (Leiden, 2015), 64.

11 S. Mitchell et al., “Church Building and Wine Making East of Ankara: Regional Aspects of Central Anatolia in the Early Byzantine Period,” *Gephyra* 21 (2021): 199–229; N. Peker, “Agricultural Production and Installations in Byzantine Cappadocia: A Case Study Focusing on Mavrucandere,” *BMGS* 44.1 (2020): 40–61; P. Niewöhner, “The Riddle of the Anatolian Cross Stones: Press Weights for Church or Monastic

environmental data allows us to gain a more trustworthy picture of the agricultural potential of this area.¹²

Amorium has been one of the few sites steadily providing us with significant new archaeological information on the subject with the discovery of considerable evidence on extensive wine production taking place inside the city between the seventh and ninth centuries.¹³ More specifically, a series of wine-making installations has been unearthed, whose number and size imply extensive viticulture locally and the processing of large quantities of grapes for the making of wine.¹⁴

The Site and the City of Amorium

Amorium is situated 970 m above sea level in the highlands of Phrygia. It lies on the southern side of a large plain that is well irrigated by rivers and streams belonging to the broader Sangarius riverine system. The plain is delimited by the Emirdağ Mountains to

the south, the Phrygian highlands to the northwest, and the Sivrihisar range to the northeast. To the west via Dorylaeum, it opens onto the road leading to Constantinople and on the east to the road to Iconium, traversing the Konya plain and reaching as far as the Cilician Gates and Syria (Fig. 1).¹⁵

The excavation has revealed a small but indicative portion of the Byzantine city that stood on top of the previous Hellenistic and Roman settlement. Byzantine Amorium can be divided into the walled Lower City that received its curtain wall probably in the late fifth or early sixth century and the fortified Upper City, which was fortified separately for the first time probably in the seventh century and refortified once again in the ninth or tenth century (Fig. 2).¹⁶ These fortifications marked the cityscape of Amorium and remained in use with several phases of reconstruction and abandonment until the second half of the eleventh century and the coming of the Seljuks into the area.¹⁷

Inside the walled Lower City, which would have been the main hub of life and work for the inhabitants of Amorium, archaeological investigation in different areas has brought to light an unusually high number of industrial installations connected to wine making.¹⁸

Estates?," in *Archaeology of a World of Changes: Late Roman and Early Byzantine Architecture, Sculpture and Landscapes; Selected Papers from the 23rd International Congress of Byzantine Studies (Belgrade, 22–27 August 2016)* in Memoriam Claudia Barsanti, ed. D. Moreau et al. (Oxford, 2020), 327–36; and G. Varinlioglu, "Trades, Crafts, and Agricultural Production in Town and Countryside in Southeastern Isauria," in *Archaeology and the Cities of Asia Minor in Late Antiquity*, ed. O. Dally and C. Ratté (Ann Arbor, MI, 2011), 173–87.

12 A recent overview of the discussion can be found in Haldon, "Remarks on History, Environment, and Climate in Byzantine Anatolia," and J. Newhard, H. Elton, and J. Haldon, "Assessing Continuity and Change in the Sixth to Ninth Century Landscape of North-Central Anatolia," in *Winds of Change: Environment and Society in Anatolia*, ed. C. H. Roosevelt and J. Haldon (Istanbul, 2022), 141–60.

13 For earlier works on Amorium wines, see C. S. Lightfoot, "Stone Screw Press Weights," in *Amorium Reports II: Research Papers and Technical Reports*, ed. C. S. Lightfoot (Oxford, 2003), 73–79; C. Lightfoot and O. Koçyiğit, "Antik Kent/Amorium: Şarap ve Felaket," *Aktüel Arkeoloji* 11 (2009): 42–43; O. Koçyiğit, "Amorium'da bulunan yeni veriler ışığında bizans dünyası'nda şarap üretimi," in *XIII. Ortaçağ ve Türk Dönemi Kazıları ve Sanat Tarihi Araştırmaları Sempozyumu bildirileri: 14–16 Ekim 2009/Proceedings of the XIIIth Symposium of Medieval and Turkish Period Excavations and Art Historical Researches: 14–16 October 2009*, ed. K. Pektaş, S. Cirtil, and S. Özgün Cirtil (Denizli, 2010), 393–402. There is no solid evidence of wine making in pre-Byzantine Amorium, as the Roman city either still lies buried or has been almost completely destroyed by later occupation.

14 Detailed discussion on the installations excavated inside the Enclosure trench appears in E. A. Ivison, "Excavations at the Lower City Enclosure, 1996–2008," in *Amorium Reports 3: The Lower City Enclosure; Finds Reports and Technical Studies*, ed. C. S. Lightfoot and E. A. Ivison (Istanbul, 2012), 47–50.

15 J. Howard-Johnston, "Authority and Control in the Interior of Asia Minor, Seventh–Ninth Centuries," in *Authority and Control in the Countryside: From Antiquity to Islam in the Mediterranean and Near East (6th–10th Century)*, ed. A. Delattre, M. Legendre, and P. Sijpesteijn (Leiden, 2019), 132–35, and K. Roussos, "Tracing Landscape Dynamics in the Vicinity of Amorium," in *Byzantine Medieval Cities: Amorium and the Middle Byzantine Provincial Capitals*, ed. N. Tsivikis (Berlin, forthcoming).

16 C. S. Lightfoot, "Survival of Cities in Byzantine Anatolia: The Case of Amorium," *Byzantion* 68.1 (1998): 64–65; E. A. Ivison, "Amorium in the Byzantine Dark Ages (Seventh to Ninth Centuries)," in *Post-Roman Towns, Trade and Settlement in Europe and Byzantium*, vol. 2, *Byzantium, Pliska, and the Balkans*, ed. J. Henning (Berlin, 2007), 41–43; and N. Tsivikis, "Amorium and the Ever-Changing Urban Space: From Early Byzantine Provincial City to Middle Byzantine Provincial Capital," in Kontogiannis and Uyar, *Space and Communities in Byzantine Anatolia*, 200–202.

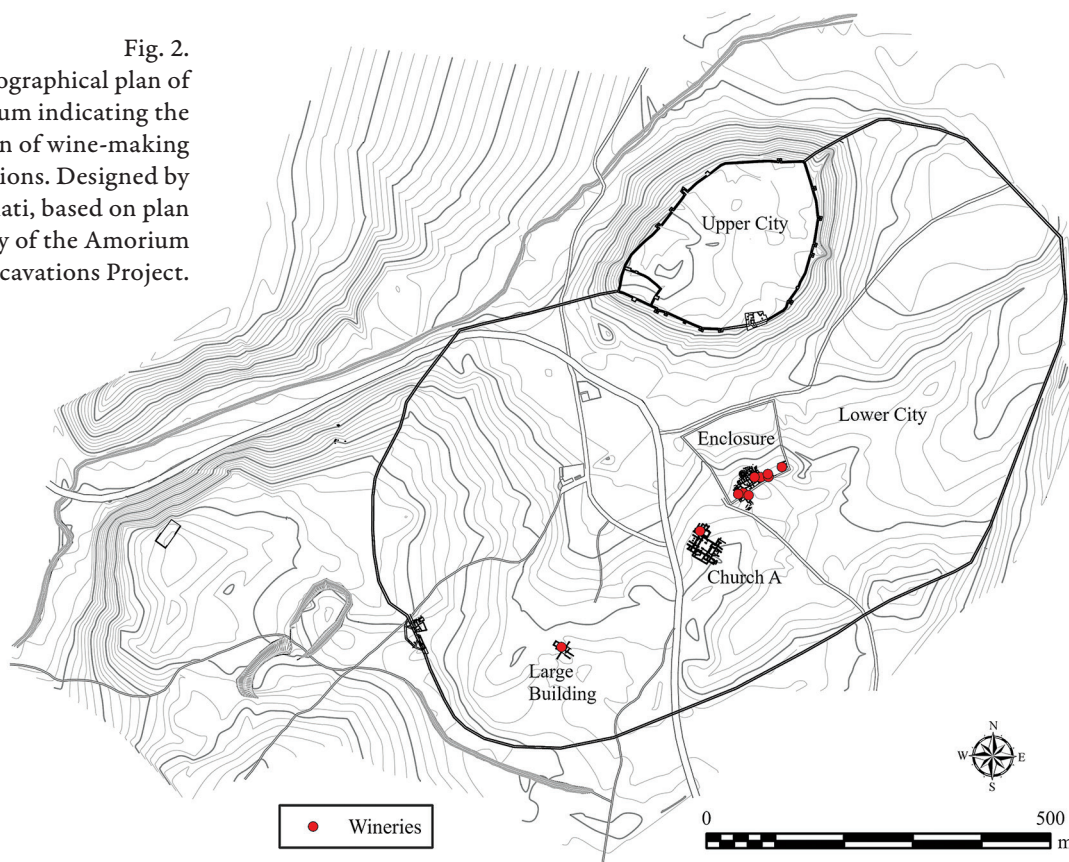
17 Lightfoot, "Survival of Cities in Byzantine Anatolia," 66; E. A. Ivison, "Urban Renewal and Imperial Revival in Byzantium (730–1025)," *ByzF* 26 (2000): 13–18; H. Yilmazyavaşar and Z. Demirel Gökalp, "Amorium'da yukarı şehir iç sur kazıları (2014–2018)," *Anadolu Üniversitesi sosyal bilimler dergisi* 21.4 (2021): 521–54; and Tsivikis, "Amorium and the Ever-Changing Urban Space," 202–5.

18 The main areas of the Lower City of Amorium that have been excavated are the Enclosure trench in the city center, named after a Middle Byzantine fortification installed after the destruction of 838; the Church A trench, also in the center; the Triangular Tower trench,

Fig. 1.
Map of Asia
Minor showing
places referred to
in the text. Map
by J. C. Donati.



Fig. 2.
Topographical plan of
Amorium indicating the
location of wine-making
installations. Designed by
J. C. Donati, based on plan
courtesy of the Amorium
Excavations Project.



Wine-Producing Installations at Amorium

Eleven wine-making installations have been excavated in Amorium up to this point, and there is circumstantial evidence for the existence of more. A detailed account of this material, presented so far either in interim excavation reports or in more generic essays, is offered here in the accompanying catalogue (Table 1).

Wineries have been unearthed at the Lower City of Amorium in three different locations (Fig. 2). The largest number of these—nine—has been discovered clustered in the center of the city, forming an industrial neighborhood, which was explored from 1996 until 2008.¹⁹ A single winery was unearthed in 2009 in a side room on the north end of Church A, attached to the wider ecclesiastical complex.²⁰ Finally, one more winery was discovered during the 2018 and 2019 excavation seasons at a considerable distance from the other installations in a trench near the western gate of the Lower City fortifications.²¹ The distribution of wineries in the Lower City of Amorium is remarkable, as they are found in three out of the four large trench areas explored so far.²²

Despite their diverse state of conservation, the Amorium wineries preserve many of their original characteristics, allowing us to reconstruct their operation and the processes that took place inside them (Fig. 3). There are two distinct types of wine-producing installations found at Amorium: treading floors and winepresses.

where the western gate of the city and parts of its Early Byzantine fortifications have been uncovered; and the Large Building trench in the southwest quadrant, where a huge late Roman/Early Byzantine building complex, parts of which were reused in the seventh to ninth centuries, has been explored.

19 The excavation trenches and related finds are discussed in detail in Lightfoot and Ivison, *Amorium Reports* 3.

20 C. Lightfoot, N. Tsivikis, and J. Foley, "Amorium kazıları, 2009," in 32. *Kazı sonuçları toplantısı* (Ankara, 2011), 1:48–49, figs. 4–5.

21 Z. Demirel Gökalep et al., "2018 yılı Amorium kazıları," in 41. *Kazı sonuçları toplantısı* (Ankara, 2020), 4:570–71.

22 It is only in the large trench of the Triangular Tower and the West City Gate that no winery remains have been discerned so far, a logical result as this concerns a liminal area focused on military defensive constructions. See C. S. Lightfoot and E. A. Ivison, introduction to *Amorium Reports, Finds I: The Glass (1987–1997)*, ed. M. A. V. Gill (Oxford, 2002), 12–13, and C. S. Lightfoot and E. A. Ivison, "Amorium Excavations 1994: The Seventh Preliminary Report," *AnatSt* 45 (1995): 110–11.

The most common type are winepresses, represented by eight fully investigated examples. They all occupied a large ground or semibasement rectangular room of larger structures, and they all shared the same basic construction characteristics that classify them as the lever-and-screw press type.²³

This type of installation worked by the lever principle, squeezing the pulp under a wooden pressboard that fitted inside a large, mortared tank, probably inside a wooden crate set within the tank. The lever was a long, solid, wooden beam, attached at one end inside the narrow wall of the room. The other end of the lever was attached through a wooden screw mechanism to a massive stone counterweight. By turning the screw mechanism, this far end of the wooden lever would lower, exercising a substantial force to the other end near the wall where the pressboard would have been attached.

A crucial element of the winery was two masonry-built orthogonal tanks (varying from rectangular to square) lined with fine waterproof mortar (Figs. 4, 5, and 6). The larger one was situated near the narrow wall of the room where the wooden lever was fixed. This was the pressing vat, or *lenos*, inside which the grapes or grape skins were pressed. Following the central axis of the pressing tank, a second and much smaller tank was constructed at a lower level; this was the collection vat, or *hypolenion*. A stone spout led the liquids from the larger, higher tank into the smaller, lower one.

No identifiable remains of the wooden parts of the press mechanisms were discovered, but other parts made of stone, built elements, mortar, and metal were found in situ or nearby.²⁴ The most commonly surviving elements are the pivot stones that were set inside a narrow wall of the winepresses for the fixing of the lever beam, as found in installations A, C, D, G, H, I, and J.²⁵ These were pairs of ashlar-doweled stone posts set vertically inside a built rubble wall and parallel to each other, allowing a narrow slit between them (Figs. 4, 7–9). They were set inside the wall masonry, and in some cases, as in installation J, the two pivot

23 Frankel, *Wine and Oil Production*, 76–85, 107–21.

24 A heap of large iron fittings has been interpreted as possibly coming from the dismantled remains of press-beam machinery in installation G: Ivison, "Excavations at the Lower City Enclosure," 55.

25 Pivot stones are referred to as "niches" elsewhere in the bibliography (see, most commonly, Frankel, *Wine and Oil Production*). In Amorium publications, we emphasize the role of this element for the lever principle, and thus we prefer the term "pivot stones."

Table 1. Catalogue of Wine-Making Installations Excavated at Amorium

Inst.	Trench Location	Type	Surviving Elements	Bibliography
A	Enclosure: XC-98 (XC-01), XD-00	Winepress	Large part of the room Pivot stones Pressing vat (partially) Press weight (orthogonal) Figs. 3 and 11	C. S. Lightfoot et al., "The Amorium Project: Research and Excavation in 2000," <i>DOP</i> 57 (2003): 289–290, and Ivison, "Excavations at the Lower City Enclosure," 13, 32–33, 55
B	Enclosure: XC-05	Winepress	Large part of the room Pressing vat Collection vat (partially) Stone spout Figs. 3 and 14	C. S. Lightfoot, "Trade and Industry in Byzantine Anatolia: The Evidence from Amorium," <i>DOP</i> 61 (2007): 273, and Ivison, "Excavations at the Lower City Enclosure," 16–17, 33, 55
C	Enclosure: XE-04	Winepress	Entire room Pivot stones Pressing vat (partially) Stone spout Press weight (drum) Figs. 3, 13, 16, and 20	C. Lightfoot, O. Koçyiğit, and H. Yaman, "Amorium kazısı, 2005," in 28. <i>Kazı sonuçları toplantısı</i> , vol. 1 (Ankara, 2007), 275–76, 291–92, pls. 4–5; Lightfoot, "Trade and Industry in Byzantine Anatolia," 272–73, fig. 2; Lightfoot, "Excavations at Amorium," fig. 6; C. S. Lightfoot, "Die byzantinische Stadt Amorium: Grabungsergebnisse der Jahre 1988 bis 2008," <i>Byzanz—das Römerreich im Mittelalter / Byzantium—the Roman Empire in the Middle Ages / Byzance—l'Empire Romain au moyen age</i> , ed. F. Daim and J. Drauschke (Mainz, 2010), 299–300, fig. 9; O. Koçyiğit, "Amorium'da bulunan yeni veriler ışığında bizans dünyası'nda şarap üretimi," 13. <i>Ortaçağ ve türk dönemi kazıları ve sanat tarihi araştırmaları sempozyumu bildirileri: 14–16 Ekim 2009</i> , ed. K. Pektaş et al. (Istanbul, 2010) 395, pl. 4; and Ivison, "Excavations at the Lower City Enclosure," 16–17, 39–41, 54
D	Enclosure: XB-03, XB-08	Winepress	Entire room Pivot stones Pressing vat (partially) Figs. 3, 7, and 16	Lightfoot, "Die byzantinische Stadt Amorium," 303–4, and Ivison, "Excavations at the Lower City Enclosure," 16–17, 35–36, 55
E	Enclosure: XE-05, XE-06/XE-08	Treading floor	Entire space Treading floor Collection vat Stone spout Figs. 3, 16, 17, and 18	C. Lightfoot, "Amorium 2005," <i>AnatArch</i> 11 (2005): 31–32; C. Lightfoot, O. Koçyiğit, and H. Yaman, "Amorium kazısı, 2006," in 29. <i>Kazı sonuçları toplantısı</i> , vol. 1 (Ankara, 2008), 450, pl. 9; Lightfoot, "Excavations at Amorium," fig. 10; Koçyiğit, "Şarap üretimi," 395, figs. 1–2; and Ivison, "Excavations at the Lower City Enclosure," 17, 42–43
F	Enclosure: XE-05, XE-06/XE-08	Treading floor	Parts of the space Treading floor (partially) Collection vat Stone spout Figs. 3, 16, 17, and 18	Lightfoot, "Amorium 2005," 31–32; Lightfoot, Koçyiğit, and Yaman, "Amorium kazısı, 2006," 450, pl. 9; Lightfoot, "Excavations at Amorium," fig. 10; Koçyiğit, "Şarap üretimi," 395, figs. 1–2; and Ivison, "Excavations at the Lower City Enclosure," 17, 42–43
G	Enclosure: XC-06/XC-08	Winepress	Entire room Pivot stones Pressing vat Collection vat Stone spout Figs. 3, 4, 5, and 6	C. Lightfoot et al., "Amorium kazıları, 2008," 31. <i>Kazı sonuçları toplantısı</i> , vol. 1 (Ankara, 2010), 137–42, pls. 8–11; C. Lightfoot and E. Ivison, "Amorium 2008," <i>AnatArch</i> 14 (2008): 25–26; C. Lightfoot, "Amorium 2009," <i>AnatArch</i> 15 (2009): 24; Lightfoot, "Die byzantinische Stadt Amorium," 298–99, figs. 8–9; and Ivison, "Excavations at the Lower City Enclosure," 17–18, 44

Table 1. *continued*

Inst.	Trench Location	Type	Surviving Elements	Bibliography
H	Enclosure: XA-01	Winepress	Room (partially) Pivot stones Figs. 3 and 19	C. Lightfoot and Y. Arbel, "Amorium kazısı 2001," 24. <i>Kazı sonuçları toplantısı</i> , vol. 1. (Ankara, 2003), 524, figs. 2, 6, and Ivison, "Excavations at the Lower City Enclosure," 14, 33
I	Church A: A19	Winepress	Room (partially) Pivot stones Pressing vat (partially) Press weight (orthogonal) Figs. 3, 8, and 12	Lightfoot, "Amorium 2009," 24–25; C. S. Lightfoot, N. Tsivikis, and J. Foley, "Amorium kazıları 2009," in 32. <i>Kazı sonuçları toplantısı</i> , vol. 1 (Ankara, 2011), 48–49, figs. 4–5, and Ivison, "Excavations at the Lower City Enclosure," 49–50
J	Large Building: Area 18	Winepress	Room (partially) Pivot stones Metal beam attachment mechanism Figs. 3, 9, 10, 21, and 23	Z. Demirel Gökalp et al., "2019 ve 2020 yılları Amorium kazıları," in <i>2019–2020 yılı kazı çalışmaları</i> , vol. 4 (Ankara, 2022), 507, fig. 4, and Tsivikis, "A Byzantine Neighborhood in Flux"
K	Enclosure: XE-05 and XE-06/ XE-08, continues under MB Enclosure wall	Treading floor	Space (partially) Treading floor (partially) Figs. 3, 16, 17, and 18	Lightfoot, "Amorium 2005," 31–32; Lightfoot, Koçyiğit, and Yaman, "Amorium kazısı, 2006," 450, pl. 9; Lightfoot, "Excavations at Amorium," fig. 10; Koçyiğit, "Şarap üretimi," 395, figs. 1–2; and Ivison, "Excavations at the Lower City Enclosure," 17, 42–43

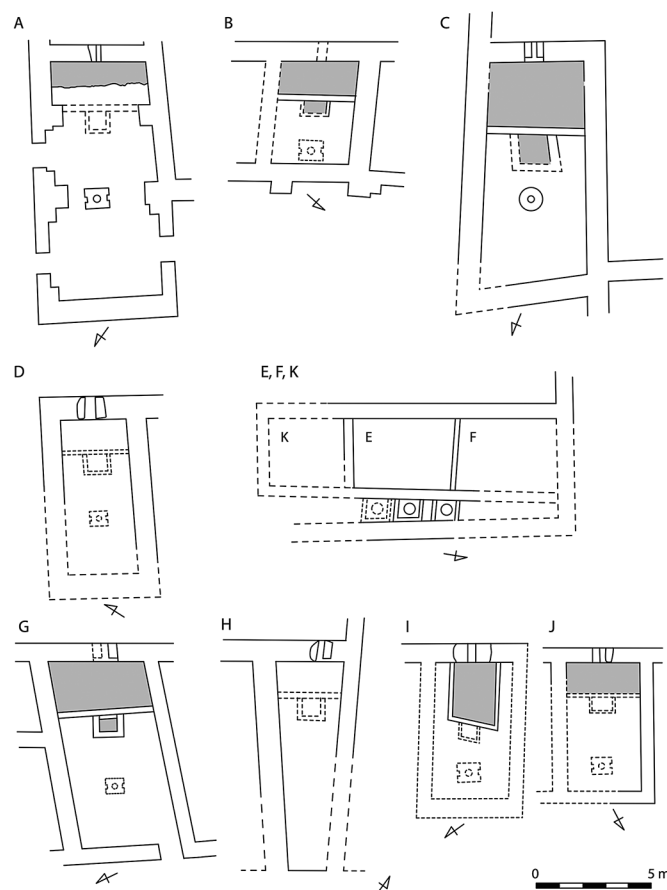


Fig. 3.
Reconstructed ground plans of
the wineries found in Amorium.
Drawing by Y. Nakas, based on
plans provided by the Amorium
Excavations Project.

Fig. 4.
Winepress (installation G)
in the Enclosure trench,
with well-preserved
pressing and collection
vats, drain with stone
spout connecting them,
and pivot stones (view
from the west).
Photograph courtesy of the
Amorium Excavations
Project, 2008, after Ivison,
“Excavations at the Lower
City Enclosure,” pl. 1/20.



Fig. 5.
Detailed view of the pressing
and collection vats with the
stone spout of the winepress
and solid stone barrier above
(installation G) (view from
the north). Photograph
courtesy of the Amorium
Excavations Project, 2008.



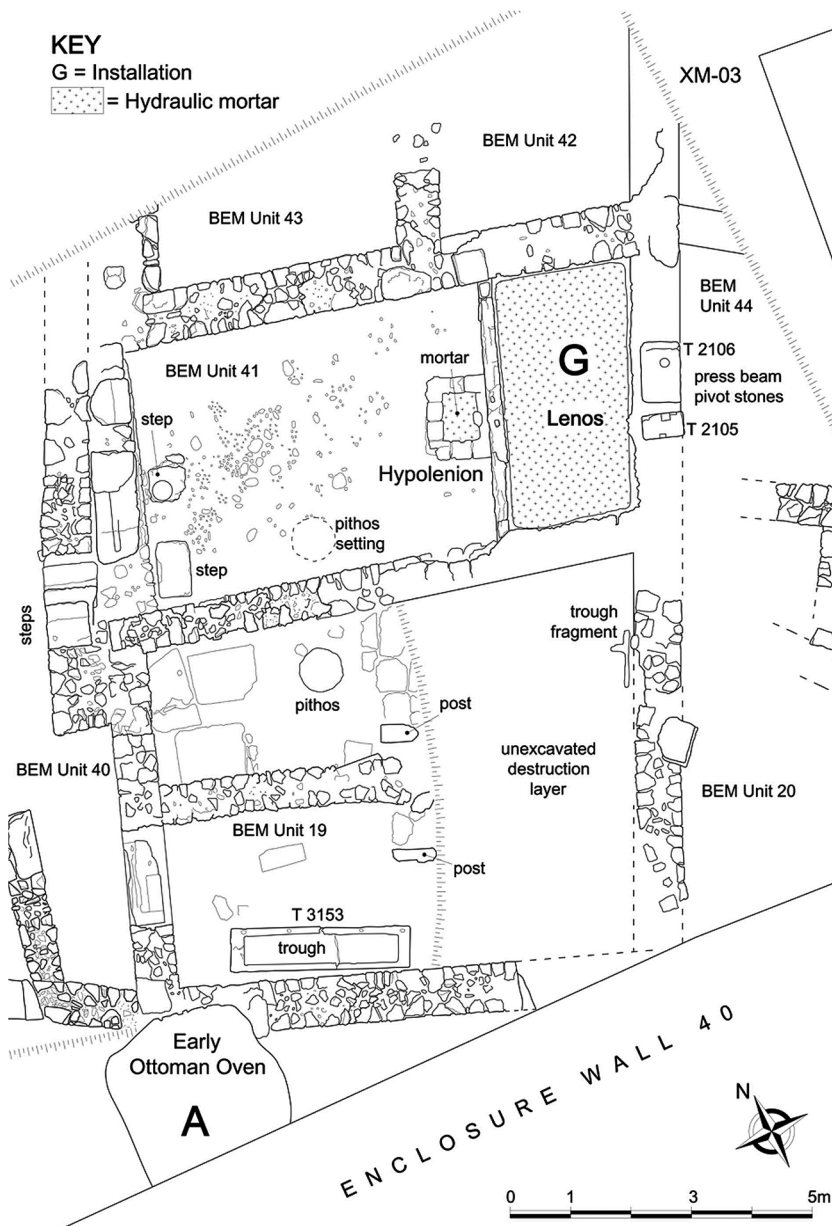


Fig. 6. Winepress (installation G) in the Enclosure trench; detailed ground plan of the entire complex that housed the winery. Drawing by T. Papadogkonas; courtesy of the Amorium Excavations Project, after Ivison, "Excavations at the Lower City Enclosure," fig. 1/16.

stones were standing on larger ones lying flat inside the wall and set as a base for the two standing stones. The base had a worked upper surface marking the areas where the two vertical stones should be placed and defining the gap between them. In other cases, as in installation G, the stones were decorated with crosses in relief on the narrow surface looking into the room. In all cases, both the standing pivot stones had on their interior faces circular, shallow dowel holes approximately 0.10 m in diameter. These holes were intended

to receive the mechanism fixing the end of the wooden lever inside the wall. The long wooden lever must have been perforated or bifurcated at its culmination inside the wall. At that point, some type of an axle set in the round dowel holes would have secured the lever. Large iron fragments of such a massive rotating mechanism or pin were found in installation J inside the slot and near the dowel holes of the pivot stones (Fig. 10). This arrangement is universal in all winepresses in Amorium and quite rare elsewhere, making them stand out from

Fig. 7.
Winepress (installation D) in
the Enclosure trench with the
pivot stones at extreme right
(view of the eastern wall from
the east). Photograph
courtesy of the Amorium
Excavations Project, 2004.



Fig. 8.
Winepress (installation I) in
Church A built inside an
annex north of the
baptistery, showing the
mortared pressing vat and
the pivot stones (view from
the north). Photograph
courtesy of the Amorium
Excavations Project, 2009.



Fig. 9.
Winepress (installation J)
in the Large Building
trench, with the surviving
pivot stones of the press on
a large stone base (view
from the east). Photograph
courtesy of the Amorium
Excavations Project, 2019.





Fig. 10.
Winepress (installation J)
in the Large Building trench:
large fragments of the iron
mechanism securing the
wooden lever beam to the
doweled pivot stones.
Photograph courtesy of the
Amorium Excavations
Project, 2019.

other known examples, where the fulcrum of the lever has been generally imagined to be adjustable.²⁶

At the other end of the lever, a massive stone served as the counterweight for the press machinery. Counterweights were found still in their original position or near it only in three winepresses of Amorium (installations A, C, and I). The surviving stone weights were either orthogonal (installation A, Fig. 11, and installation I, Fig. 12) or cylindrical (installation C, Fig. 13). The weights of installations A and C were also decorated with Christian crosses in relief, a characteristic that is not uncommon on Middle Byzantine winery screw weights from Anatolia.²⁷ The upper surface of these weights had square and circular dowel holes and dovetail cuts for the slotting and attaching of the wood and metal mechanism of the screw; for the same

reason, the two orthogonal weights had cut mortises on the sides.²⁸

In addition to the three weights found in situ or near the excavated wineries, another ten large stone screw weights have been recorded in Amorium, lying in the fields or in the houses of the modern village of Hisar.²⁹ In total, thirteen large stone weights have been recorded, and among them, only three are securely associated with the eight winepress installations excavated so far. The excessive number of screw press weights clearly indicates that the number of operating winepresses inside the walled city of Amorium was considerably higher than the eight already excavated.³⁰

These stone pieces were made-to-order for the presses and must have been highly valued elements, as evidenced by the workmanship invested in them and their occasional decoration. Eventually, when the winepresses fell out of use, they would be the pieces of

26 We would like to thank one of the anonymous reviewers for bringing this fact to our attention.

27 Niewöhner, "Riddle of the Anatolian Cross Stones." Counterweight stones with Christian inscriptions and crosses were also found in late antique Delos (Dodd, *Roman and Late Antique Wine Production*, 108–10, pls. 20–21). There are also examples that trace the tradition for inscribing such production equipment with inscriptions and symbols of protection or ownership in Roman times, as with a third-century *mortarium* from a *trapetum* olive press found in Attica; see S. Katakis, V. Nikolopoulos, and P. Fotiadi, "Νέες έρευνες στον αρχαιολογικό χώρο του λεγόμενου Ρωμαϊκού βαλανείου στην Ραφήνα: Ιδιωτικός ή δημόσιος χώρος," in *What's New in Roman Greece? Recent Work on the Greek Mainland and the Islands in the Roman Period*, ed. V. Di Napoli et al. (Athens, 2018), 322–23.

28 A detailed typology of dovetail cuts and mortises on oil- and winepress weights appears in R. Frankel, "Presses for Oil and Wine in the Southern Levant in the Byzantine Period," *DOP* 51 (1997): 73–84, and Frankel, *Wine and Oil Production*.

29 Six weights, all belonging to the type with a socket and two mortises, were published in 2003 by Lightfoot, "Stone Screw Press Weights." Four more (Amorium inventory nos. T1925, T2016, T3259, and T3363) were later mentioned in passing by Ivison, "Excavations at the Lower City Enclosure," 49. Three more screw press weights from Amorium have been recorded since by Lightfoot in a yet unpublished additional catalogue that was kindly made available to the authors.

30 Lightfoot, "Business as Usual?," 184–87.

Fig. 11.
Winepress (installation A) in
the Enclosure trench with
the stone press weight close
to its original position (view
from the south). Photograph
courtesy of the Amorium
Excavations Project, 2001.



Fig. 12.
Winepress (installation I)
in Church A with the
orthogonal stone press
weight found in situ (view
from the east). Photograph
courtesy of the Amorium
Excavations Project, 2009.



Fig. 13.
Winepress (installation C)
in the Enclosure trench, with
remains of the pressing vat,
the collection vat, and the
cylindrical stone press
weight in situ (view from the
north). Photograph courtesy
of the Amorium Excavations
Project, 2005, after
Lightfoot, "Business as
Usual?," 185, fig. 7.5.



the mechanism that could be easily reutilized in other constructions. Stone screw weights have been discussed lately as a secure indicator for the existence of winepresses in other instances across Anatolia.³¹ In our case, the weights complement the picture of extensive wine production inside the walls of the Lower City of Byzantine Amorium.

Characteristic of the Amorium winepresses are also the two tanks found in each installation: the pressing vat and the collection vat. The pressing vat, or large parts of it, is preserved in seven of the eight winepresses (A, B, C, D, G, H, and I). It usually covered an orthogonal area along the narrow end wall of the room in front of the wall where the lever was fitted. The best preserved and larger pressing vats in installations C and G measured approximately 4×2.5 m and were more than 1 m deep (see above, Figs. 4, 5, and 13).

The collection vats were placed next to the pressing basins and along their longitudinal axis. Since these vats were smaller and less massive, their archaeological remains were preserved only in three of the eight winepresses (B, C, and G), but it is certain that all of the installations would have collection vats in approximately the same location (Fig. 14; see above, Figs. 5 and 13).³² The surviving collection vats are less than a quarter the size of the pressing vats, with the best-preserved one, found in Installation G, measuring approximately 1.50×1 m and 0.75 m deep. The collection vats were set at a lower level, as they were intended to receive and collect the juice flowing from the higher pressing basins.

Flow between the pressing and the collection vats was facilitated by gravity and siphoned through limestone conduits attached to the elevated tank that projected over the lower tank channeling the juice. Such stone spouts were found in situ or nearby in three of the winepresses (B, C, and G) (see above, Figs. 5 and 14). They were made-to-order elements of local limestone,

like the weights, the pivot stones, and some elements of the pressing tanks.

Both pressing and collection vats were carefully built of mortared masonry with frequent use of recycled Roman bricks; their interior was covered with strong hydraulic mortar suitable for pressing grapes or grape skins, but not hard enough for crushing olives, a fact that excludes olive-oil production in these presses.³³ In order to better understand the use of these constructions, mortar samples from the pressing basin of installation G underwent residue analysis at the Department of Scientific Research of the Metropolitan Museum of Art in New York. According to the report, residues of syringic acid and lactic acid were detected on the pink mortar lining the tank, suggesting the presence of juice or wine from red grapes (Fig. 15).³⁴

Regarding their technology, the winepresses of Amorium were sophisticated devices. Their identical technical characteristics possibly point to a common episode or a centrally orchestrated program for their creation. Indeed, as we shall see, they were all built and functioned within a limited period between the mid-seventh and the late eighth or early ninth centuries. The importance of this investment is underlined by the special treatment of certain stone parts of the pressing mechanism that were decorated with Christian apotropaic symbols, probably to safeguard these devices and ensure their smooth operation.³⁵

In most cases, the winepresses of Amorium occupied the ground floor or semibasement of two-story buildings, whose upper floor had a domestic use as evidenced by the contextual (or accompanying)

31 Mitchell et al., "Church Building and Wine Making"; Niewöhner, "Riddle of the Anatolian Cross Stones"; and E. Laflı, "Archäologische Evidenzen zum Weinanbau im südwestlichen Paphlagonien in römischer und frühbyzantinischer Zeit," in *Die Schätze der Erde: Natürliche Ressourcen in der antiken Welt; Stuttgarter Kolloquium zur Historischen Geographie des Altertums 10, 2008*, ed. E. Olshausen and V. Sauer (Stuttgart, 2012), 261–79.

32 Collecting vats are a characteristic element of winepresses and in the lever and screw presses are almost always put along the central axis of the installations, allowing the applied pressure to be maximized.

33 For arguments rejecting the use of Amorian presses for olive oil production, see Lightfoot, "Stone Screw Press Weights," 74–75. Additionally, there is no other evidence for any olive-pressing activity in Amorium (i.e., no stone mortars or pressing basins were found). After all, Amorium—at an elevation of approximately 1000 m above sea level and more than 400 km away from any coast—lies firmly outside the olive-tree production zone.

34 The examination was commissioned by C. S. Lightfoot and performed by Adriana Rizzo and Meghan Schwab of the Department of Scientific Research of the Metropolitan Museum of Art in New York (Amorium archive, residue analysis report, 18.02.2016).

35 For stone press weights with decoration, usually Christian, see: Dodd, *Roman and Late Antique Wine Production*, 108–10; Niewöhner, "Riddle of the Anatolian Cross Stones." For rock-cut wineries in Cappadocia with fresco decoration, see Peker, "Agricultural Production," 49–50. For analogous pagan practices in a Roman context, see Dodd, "Archaeology of Wine Production," 454.

Fig. 14.
Winepress (installation B)
in the Enclosure trench,
with remains of the
pressing vat, the collection
vat, and the drain
connecting them (view
from the south).
Photograph courtesy of
the Amorium Excavations
Project, after Ivison,
“Excavations at the Lower
City Enclosure,” pl. 1/10.



archaeological finds.³⁶ In the *Geoponika*, we read that the wine-making installations should be constructed in well-aired areas with plenty of light, since they need to be thoroughly cleaned and dried after use.³⁷ However, the practice often seems to contradict this advice.³⁸ In the dry climate of Central Anatolia, drying the grape

basins and airing the rooms would have been relatively easy, as we can see in the numerous underground wine-treading installations of medieval and early modern Cappadocia.³⁹ The practice of the well-protected, almost subterranean, wine-pressing installations would additionally have resolved the constant problem of dust blowing in, especially in an urban setting.

Specific installations were needed, as we will see below in detail, during the second stage of the wine-

36 The metal finds, among which is a substantial number of tools and weapons, from the Enclosure trench are in the process of publication: Ivison, “Excavations at the Lower City Enclosure,” 7, 56.

37 *Geoponika* 6.1, 6.10, 6.13 (H. Beckh, ed., *Geoponica sive Cassiani Bassi scholastici de re rustica eclogae* [Leipzig, 1895], 170–71, 179, 182–83).

38 Dodd, *Roman and Late Antique Wine Production*, 38–39, provides a short comparison of pros and cons between open-air and covered or in-house treading rooms.

39 Peker, “Agricultural Production”; E. Balta, “The Underground Rock-Cut Winepresses of Cappadocia,” *Journal of Turkish Studies* 32.1 (2008): 61–88; and E. Balta, “Τα υπόσκαφα λαξευτά πατητήρια της Καππαδοκίας,” in *Οίνον ιστορώ IV: Θλιπτήρια και πιεστήρια; Από τους ληνοὺς στα προβιομηχανικά τσιπουρομάγανα*, ed. G. A. Pikoulas (Athens, 2005), 226–67.

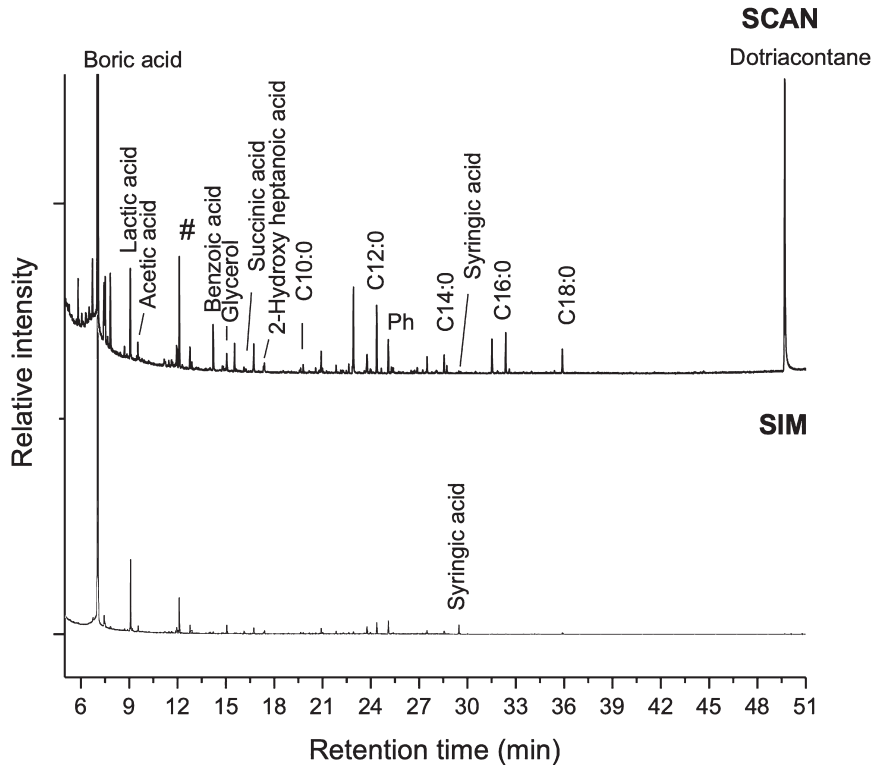


Fig. 15. Residue analysis results of mortar samples from the pressing tank of a winepress (installation G). Analysis by the Department of Scientific Research, the Metropolitan Museum of Art, New York. Chart courtesy of C. S. Lightfoot.

making process, when the pulp and the skins of the first treading were pressed to extract the remaining must.⁴⁰

The first stage traditionally involved treading the grapes by feet in large tanks. Three such simpler treading floors (installations E, F, and K) were discovered in Amorium.⁴¹ These were shallow, broad troughs surrounded by low walls not higher than 0.30 m, looking more like enclosed floors lined with strong, waterproof, pink mortar. All three treading floors found were part of a single complex. The best-preserved one is installation E, which stood in the middle of the three with installation F to its north and installation K to its south (Figs. 16 and 17). The treading floor F was a rectangular

tank, measuring 2.65×1.90 m. Its east side was defined by a higher wall rising to 0.80 m and made of large limestone slabs. The wall had stone spouts at a lower point on its outside, similar to the ones in the winepresses, that led the drained liquid to deep collection vats coated with hydraulic mortar (Fig. 18). The treading-floor complex seems to have been a semi-open-air installation with a shed-like roof, supported by wooden posts and neighboring side walls.⁴² This is quite distinctive to the winepress rooms, which were all enclosed ground or semibasement rooms.

Wine making seems to have been an important aspect of the much broader economic activity taking place in the houses and larger complexes of Amorium. The domestic units that contained the wine-producing installations hosted several other productive activities, as indicated by contextual finds in adjacent rooms and open spaces, such as stone troughs for animal feeding, storage pithoi, and iron tools for various industrial or agricultural purposes (see, e.g., the courtyard south of installation G, Fig. 6, and the rooms around installation H, Fig. 19).⁴³

40 The poor-quality wine produced by the pressing of the pulp was called *θάμνα(-ας)* (*Geoponika* 6.13 [Beckh, *Geoponica*, 182]). This kind of wine was also named *οἶνος δευτέριος* or *δευτερίας* (second wine) (I. Anagnostakis, “Περὶ θλίψεων καὶ ἐκθλίψεων,” in Pikoulas, *Οἶνον ἱστορῶ IV*, 77–167, at 119–20, 127). In Roman Egypt, it was named *οἶνος ἀπὸ στεμφύλων* (wine made from grape skins) (D. Dzierzbicka, *OINOΣ: Production and Import of Wine in Graeco-Roman Egypt* [Warsaw, 2018], 223).

41 Ivison, “Excavations at the Lower City Enclosure,” 43, based on the discovery of another collection vat, suggests that there must have been one more treading floor to the south under the thick Middle Byzantine Enclosure wall.

42 Ivison, “Excavations at the Lower City Enclosure,” 42.

43 Lightfoot, “Excavations at Amorium,” 141–43; Ivison, “Excavations at the Lower City Enclosure,” 35, 56; and N. Tsivikis, “A

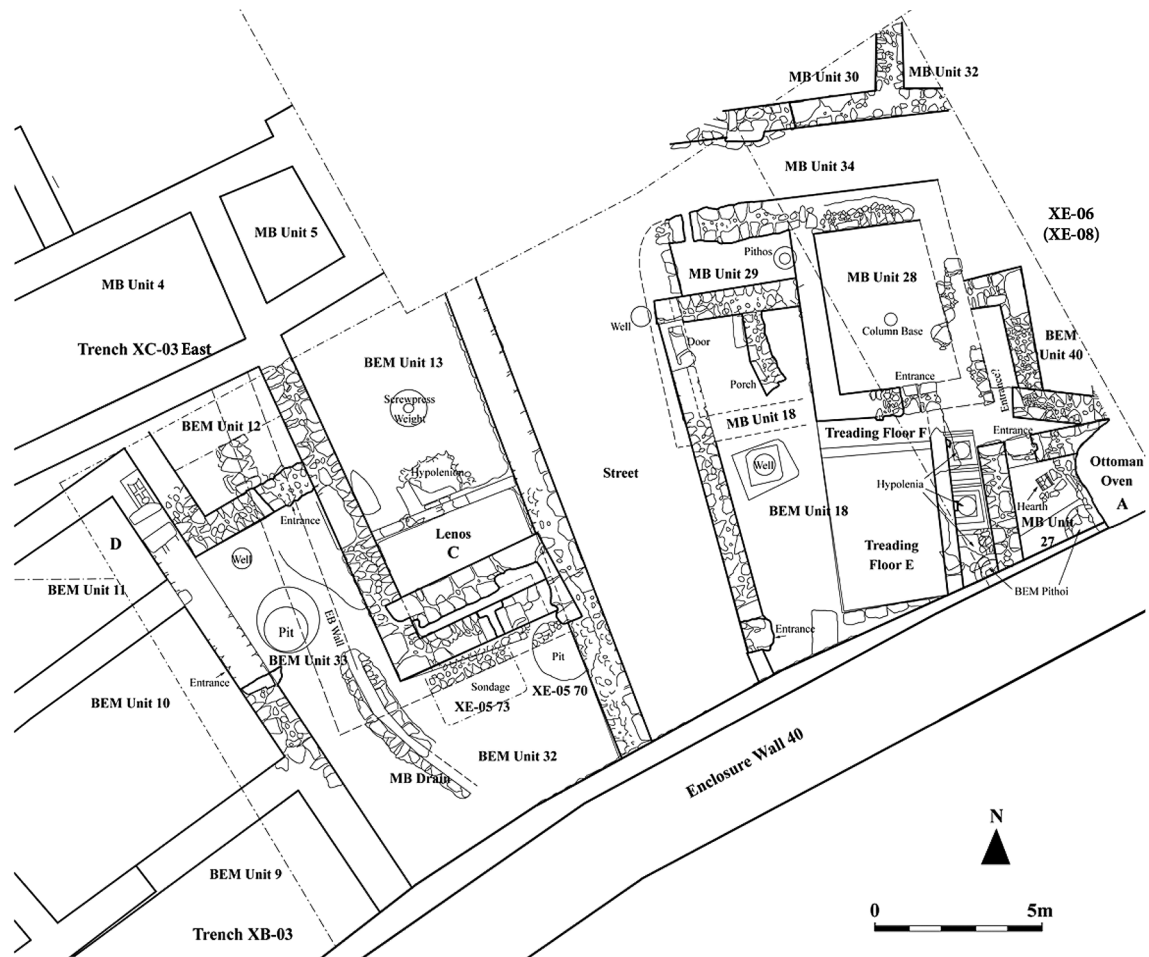


Fig. 16. Ground plan of part of an early medieval Byzantine neighborhood excavated in the Enclosure trench with two winepresses (installations C and D) west of a cobbled street and a complex of three treading floors (installations E, F, and K; installation K lies in the plan under Middle Byzantine Enclosure wall 40.) on the east side. Drawing courtesy of the Amorium Excavations Project, after Ivison, "Excavations at the Lower City Enclosure," fig. 1/14.

Fig. 17. Treading floors (installations E, F, and K) in the Enclosure trench: at center, the mortared surface of installation E; at top, partially excavated mortared surface of installation F (view from the south). Photograph courtesy of the Amorium Excavations Project, 2005.





Fig. 18.
Collection vats with stone
spouts running from the
treading floors of
installations F and E.
Photograph courtesy of the
Amorium Excavations
Project, 2005, after Ivison,
“Excavations at the Lower
City Enclosure,” pl. 1/18.



Fig. 19.
Winepress (installation H)
outside the Enclosure
trench, with remains of the
pivot stones (view from the
east). Photograph courtesy
of the Amorium Excavations
Project, 2001.

The Creation and Abandonment of Amorium's Wine-Making Industries

The wine-making installations found across Amorium share many common features in their overall construction (building techniques, composition of the strong hydraulic mortar) and the technological solutions adopted. All these suggest that the wineries were created within a short period of time, and the time span of their use could hardly have been more than a century or two. The detailed published accounts on the

Byzantine Neighborhood in Flux: 2013–2019 Excavation of the Large Building in the Lower City at Amorium,” in Tsvikis, *Byzantine Medieval Cities*.

stratigraphy of the ongoing excavation have determined this time span with relative accuracy.⁴⁴

The wineries were first introduced inside the city walls most probably around the middle of the seventh century.⁴⁵ This was a time when the established urban fabric of the city began to lose its late Roman and Early Byzantine character, and the form and function of entire neighborhoods of the city underwent a dramatic change.⁴⁶

44 See Table 1 for detailed references to each installation with bibliographical and archaeological data.

45 Ivison, “Excavations at the Lower City Enclosure,” 47–50.

46 Ivison, “*Amorium* in the Byzantine Dark Ages”; Lightfoot, “Survival of Cities in Byzantine Anatolia”; Tsvikis, “Amorium and

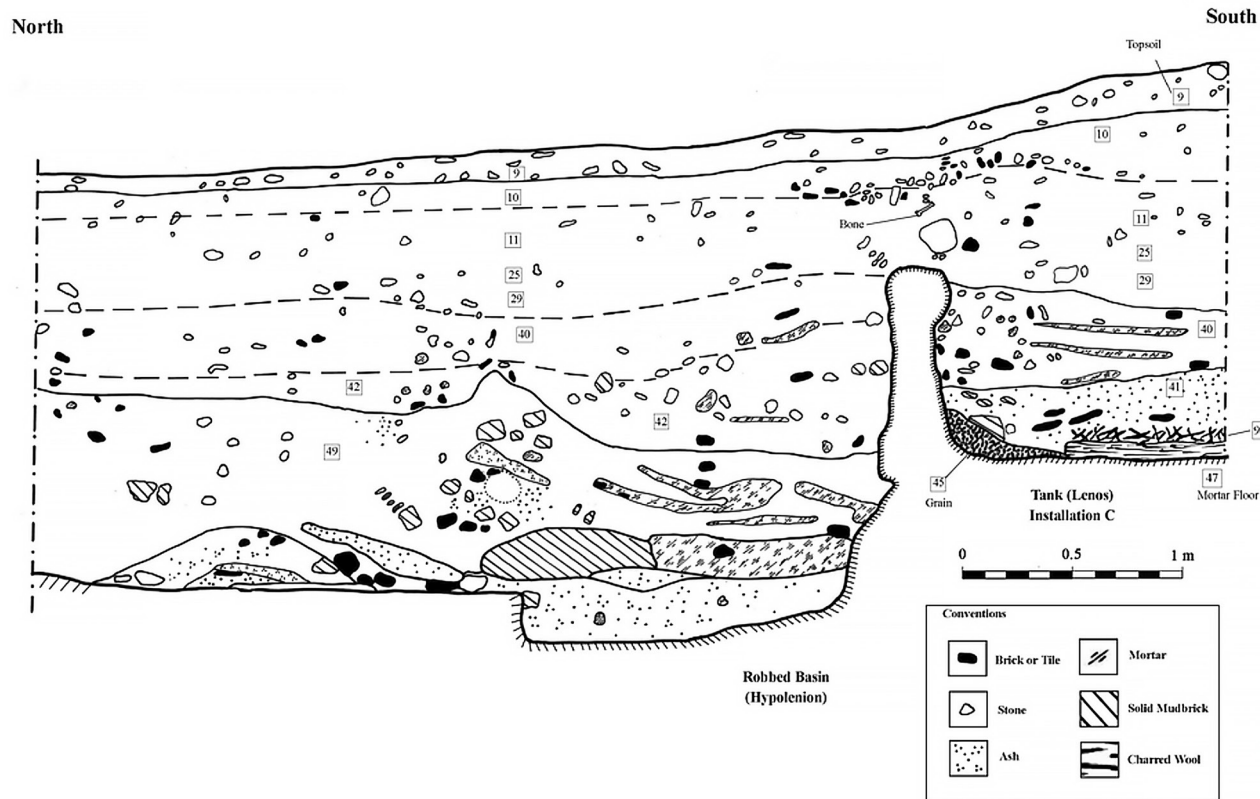


Fig. 20. Stratigraphical section of the fill inside winepress installation C, with remains of grain stored inside the pressing vat at right. Drawing courtesy of the Amorium Excavations Project, after Ivison, “Excavations at the Lower City Enclosure,” fig. 1/22.

Based on the excavation data, the end of the wineries can also be dated with certainty at some point before the sack of the city by the Arabs in 838.⁴⁷ Most of them were already no longer in use before the destruction of the city, as revealed by their archaeological picture. Winepress installations A, B, D, G, and J were found largely dismantled by the time they were trapped inside the destruction layer. Some of their built components had been removed and likely their wooden mechanisms as well, although this cannot be verified. Their pressing vats, wherever they have survived, were repurposed as storage depots for grain or barley, as evidenced in the stratigraphy of installations

C and G (Fig. 20).⁴⁸ In other cases, the pressing and collection basins were completely dismantled, and new storage facilities had been built in their place (Fig. 21). This is one of the main reasons that very few contextual small finds can be attributed to the period of use of the wineries, as intensive wine-making activity inside the city had ceased before the final destruction of these spaces.

Some archaeological evidence in installation I, belonging to the complex of Church A, suggests that this might have been the only winepress that was still intact at the time of the destruction of 838 and perhaps

the Ever-Changing Urban Space”; and Z. Demirel-Gökalp and N. Tsivikis, “Understanding Urban Transformation in Amorium from Late Antiquity to the Middle Ages,” in *Proceedings of the Plenary Sessions: The 24th International Congress of Byzantine Studies, Venice and Padua, 22–27 August 2022*, ed. E. Fiori and M. Trizio (Venice, 2022), 324–44.

⁴⁷ Ivison, “Excavations at the Lower City Enclosure,” 54–56.

⁴⁸ Some of the old wine-pressing basins were found burnt and full of carbonized grain as a result of the destruction (Ivison, “Excavations at the Lower City Enclosure,” 54–56). This means that by the early ninth century some of these spaces would have been converted into silos for storage or that other processes could be taking place inside them, like wheat thrashing (Anagnostakis, “Περὶ θλίψεων καὶ ἐκθλίψεων,” 83–84).



Fig. 21.
Aerial view of the large storage room filled with numerous sealed pithoi created out of installation J in the Large Building trench after the dismantlement of the winepress. Photograph courtesy of the Amorium Excavations Project, 2019.

still functioning (see above, Figs. 8 and 12).⁴⁹ We cannot determine the exact time of abandonment for each winery. Since they were only partially dismantled and their spaces were still in use, albeit in a different context, we can plausibly suggest that their abandonment must have happened only a few decades before 838.⁵⁰

Summing up the evidence, the creation and exploitation of the wine-producing facilities of Amorium can be placed between the middle of the seventh century and the beginning of the ninth century. Thus, their function seems to represent a boom episode in the economic life cycle of early medieval Byzantine Amorium.⁵¹

Reconstructing Wine Making in Early Medieval Byzantine Amorium

Vineyards around Amorium, the Grape Harvest, and Its Transportation

In order for the numerous wine-producing installations found at Amorium to function, they demanded

a massive quantity of grapes. In premodern societies, vineyards were preferably situated not far away from these installations, since the transport of grapes over long distances entailed great risks like losing the prized first grape juice or initiating primary fermentation.⁵² There is no archaeological evidence so far of vineyards planted inside the walled area of the city, which was highly developed until at least the ninth century.⁵³ Consequently, we need to assume that extensive viticulture must have been taking place in the city's immediate hinterland.

The soil in the vicinity of Amorium was and still is appropriate for vine cultivation. The settlement is surrounded by a well-watered fertile plain, today engaged

52 Dodd, *Roman and Late Antique Wine Production*, 113.

53 Amorium does not seem to follow the rule of other post-seventh-century Byzantine cities with the insertion of cultivated fields inside the urban space as part of a phenomenon of "ruralization." For relevant recent discussion, see N. Tsivikis, "Messene and the Changing Urban Life and Material Culture of an Early Byzantine City in the Western Peloponnese (4th–7th Century)," in *Transformations of City and Countryside in the Byzantine Period*, ed. B. Böhlendorf-Arslan and R. Schick (Mainz, 2020), 39–53, and A. Vionis, "Abandonment and Revival between Late Antiquity and the Early Middle Ages: Facts and Fiction," in *Before/After: Transformation, Change, and Abandonment in the Roman and Late Antique Mediterranean*, ed. P. Cimadomo et al. (Oxford, 2020), 85. Vines were cultivated inside the urban fabric of Roman cities, as we know from Pompeii; see lately E. Dodd, "Pressing Issues: A New Discovery in the Vineyard of Region I.20, Pompeii," *ArchCl* 68 (2017): 577–88.

49 C. Lightfoot, "Amorium 2009," *AnatArch* 15 (2009): 24–25, and Lightfoot, Tsivikis, and Foley, "Amorium kazilari, 2009," 48–49, figs. 4–5.

50 Ivison, "Excavations at the Lower City Enclosure," 59–60.

51 Emlyn Dodd describes a similar boom episode event, in an earlier timeframe, by analyzing the introduction of wine making installations in Early Byzantine Delos in the Aegean (Dodd, *Roman and Late Antique Wine Production*, 108–12).

mostly in the cultivation of cereals, that historically could have been used for viticulture.⁵⁴ At the same time, about 10 km to the south, the rolling foothills of the mountain range of Emirdağ offer a gentle inclination appropriate for vineyards.⁵⁵ Thus, in an easily walkable distance around the city, there is ample land, both flat and sloping, that could have hosted vineyards.⁵⁶

The climate of the area is also adequate for wine production with wet, cold winters and dry, hot summers. Modern reconstructions of the historical climate show significant long-term changes from the fourth to the eleventh centuries in the curve of temperature and moisture, but we cannot be sure about their implications for viticulture.⁵⁷ Viticulture remains extremely difficult to trace using environmental proxies since vine pollen travels very short distances from the plant and is seldom found in the lake beds where the well-dated sample cores have been drilled; thus, vines are heavily underrepresented in such samples.⁵⁸

54 Even today there are some traces of abandoned vineyards, probably modern, in the immediate hinterland of Amorium or even inside the village; see R. M. Harrison and N. Christie, "Excavations at Amorium: 1992 Interim Report," *AnatSt* 43 (1993): 153; Ivison, "Excavations at the Lower City Enclosure," 48; and R. M. Harrison, *Mountain and Plain: From the Lycian Coast to the Phrygian Plateau in the Late Roman and Early Byzantine Period*, ed. W. Young (Ann Arbor, MI, 2001), 74. According to *Geoponika* 7.1 (Beckh, *Geoponica*, 188), τὰ κοῖλα χωρία πολλὸν τὸν οἶνον ποιεῖ καὶ φαῦλον (valley land produces abundant, poor-quality wine). For the translation, see A. Dalby, *Geoponika: Farm Work; A Modern Translation of the Roman and Byzantine Farming Handbook* (Totnes, 2011), 159.

55 In *Geoponika*, 5.2, it is recognized that "the finest wine is that made from vines grown on dry and sloping terrain facing East and South" (Dalby, *Geoponika* 12.4); instead, the foothills of the Emirdağlar face mostly north on the side toward Amorium.

56 Roussos, "Tracing Landscape Dynamics." These favorable conditions are not the rule in Central Anatolia, as the plateau is mainly covered by shallow and poor soil coming from the erosion of limestone ranges. On the soils allowing cultivation of vines in Central Anatolia, see Mitchell, *Anatolia*, 1:145–47, and R. L. Gorny, "Viniculture and Ancient Anatolia," in *The Origins and Ancient History of Wine*, ed. P. E. McGovern, S. J. Fleming, and S. H. Katz (London, 1996), 137–47.

57 Haldon, "Remarks on History, Environment, and Climate in Byzantine Anatolia."

58 S. D. Turner and A. G. Brown, "Vitis Pollen Dispersal in and from Organic Vineyards: I. Pollen Trap and Soil Pollen Data," *Review of Palaeobotany and Palynology* 129 (2004): 117–32; this assumption was further verified by D. Fuks et al., "The Rise and Fall of Viticulture in the Late Antique Negev Highlands Reconstructed from Archaeobotanical and Ceramic Data," *Proceedings of the National Academy of Sciences* 117:33 (2020): 19785. For pollen from

Interestingly enough, there might be some information on the organization of historical, possibly Byzantine, vineyards in the analysis of field systems surrounding the city. According to a historic landscape characterization (HLC) model developed specially for the agricultural landscape of Amorium, visible land divisions southwest of the city and other long-abandoned land divisions further south in the low hills toward the Emirdağ Mountains could reflect historical agricultural divisions and plots (Fig. 22).⁵⁹ These are medium to small plots of two different types: strip fields, probably intended for grain cultivation as their form was suitable for the back and forth movement of the oxen and the plow, and more regular coaxial orthogonal plots, better candidates for vineyards, especially as we come close to the Emirdağ foothills.⁶⁰

Lake Nar used to comment on Byzantine Cappadocia cultivations, see A. England et al., "Historical Landscape Change in Cappadocia (Central Turkey): A Palaeoecological Investigation of Annually Laminated Sediments from Nar Lake," *The Holocene* 18.8 (2008): 1229–45.

59 The distribution of farming land around Amorium and the evolution of Byzantine field systems are being studied as part of the research project "Byzantine Agricultural Landscape Across the Aegean–BALAA" hosted at the Institute for Mediterranean Studies/FORTH and funded by the Hellenic Foundation for Research and Innovation. Preliminary presentation on the project can be found in N. Tsivikis and J. C. Donati, "The Byzantine Agricultural Landscape across the Aegean Project and the Byzantine Field Systems: Is There a Distinct Type of Byzantine Field?," in *Abstracts of the Free Communications, Thematic Sessions, Round Tables and Posters: The 24th International Congress of Byzantine Studies; Venice and Padua, 22–27 August 2022*, ed. L. Farina and E. Despotakis (Venice, 2022), 294.

60 Our knowledge of the archaeology of Roman vineyards is mostly limited to the earlier Roman period and the West. Some of the best documented examples are the vineyards excavated in and around Pompeii. For an overview, see Dodd, "Archaeology of Wine Production," 451–54; W. Jashemski, "Produce Gardens," in *Gardens of the Roman Empire*, ed. W. F. Jashemski et al. (Cambridge, 2018), 125–34; in Britain, A. G. Brown et al., "Roman Vineyards in Britain: Stratigraphic and Palynological Data from Wollaston in the Nene Valley, England," *Antiquity* 75.290 (2001): 745–57; and elsewhere. On the actual form and archaeology of Byzantine vineyards (of which we know very little) with a focus on the Early period, see A. Zerbini, "Landscapes of Production in Late Antiquity: Wineries in the Jebel al-'Arab and Limestone Massif," in *Territoires, architecture et matériel au Levant: Doctoriales d'archéologie syrienne; Paris-Nanterre, 8–9 décembre 2011*, ed. A. Le Bihan et al. (Beyrouth, 2012), 41, <https://books.openedition.org/ifpo/2886>. Abundant documented information comes from sixth- and seventh-century Egypt; see N. Litinas, ed., *Greek Ostraca from Abu Mina (O.AbuMina)* (Berlin, 2008), 68–69,

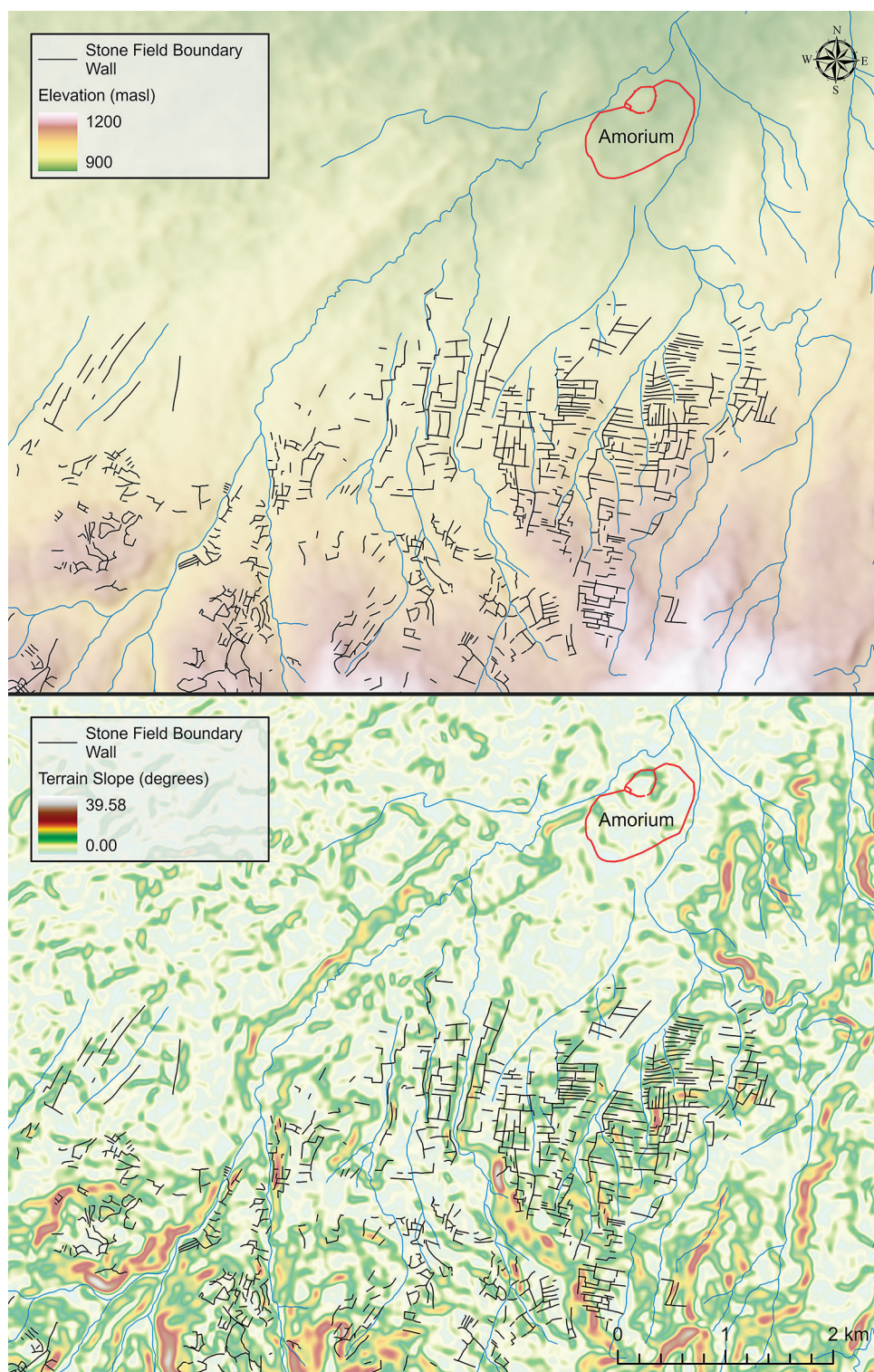


Fig. 22. GIS model of stone field boundary walls with historical information south of Amorium, elevation (upper image) and terrain-slope (lower image) modeling. GIS and analysis by J. C. Donati, courtesy of the Byzantine Agricultural Landscape Across the Aegean (BALAA) Project, Institute for Mediterranean Studies/FORTH.

These fields also had access to the city through country roads that lead to the west and southwest gates of the Lower City fortifications.⁶¹ In this way, grapes could have been transferred quickly and securely from the nearby vineyards to the wineries. Inside the city itself, the wineries were situated on major (broad) streets accessible to carts that were still in use and well-maintained until the mid-ninth century (see above, Fig. 16).⁶²

Treading and Pressing the Grapes

The wine installations found at Amorium were used both for treading and for pressing grapes. The very first stage of the whole procedure, preceding the treading and pressing of the fruit, took place immediately after the transportation of the grapes into the city, when these were placed inside the vats, where the natural pressure of their own weight would extract the first and best-quality must (πρότροπον). Then followed the main stage of wine production, the treading by foot, during which the grapes lose approximately 80 percent of their juice.⁶³ In the third stage, the already trodden grapes were usually moved to the winepresses for further extraction of their fluids.⁶⁴

The material put in the winepress would have been mostly remains of grapes already trodden, offering an inferior quality product. However, we cannot exclude the possibility that grapes coming directly from the harvest with no previous treading also could have been pressed in order to expedite the process, resulting in a

better-quality must, close to the one produced by grape treading. There is no way of establishing which one of the aforementioned qualities of must was extracted in the Amorium presses, and probably any or various combinations could have occurred.

An important aspect of grape pressing was containing the grape skins, pulp, and stalks during the process to filter the must and keep the conduit unblocked. The usual containers in this process were thread and rope frails (gr. σχοινίον, ὄρος; lat. *fiscus*) and in fewer cases specially made wooden press frames (gr. γαλεάγρα; lat. *regula, galeagra*).⁶⁵ In Amorium, no archaeological evidence is preserved for either, but it would have been in any case difficult to find such remains given their organic nature. In earlier studies of Amorium winepresses, it has been assumed that the press boards would have been set freely on the lever and that, when lowered, they would have exercised pressure along their surface.⁶⁶ Detailed analysis of the possible operation mode of the winepresses has shown that more likely a wooden frame or frails containing the grapes must have been set inside the pressing vat and the press board would have followed guided movement inside the wooden frame.⁶⁷ Additionally, as already mentioned, the wineries in their final use had been dismantled, and most of their mobile parts had been removed, along with perishable items like rope frails or wooden frames.

It is interesting to note the distinction between facilities with just treading areas and ones with presses. In the examples from Amorium presented here, it seems that these processes were separate and the installations possibly owned by different wine makers.⁶⁸ The small number of treading floors discovered in Amorium, only

and T. M. Hickey, *Wine, Wealth, and the State in Late Antique Egypt: The House of Apion at Oxyrhynchus* (Ann Arbor, MI, 2012), 39–61.

61 Grapes would have been transferred in baskets carried by mules and/or carts, as numerous sources and depictions attest; see Dodd, *Roman and Late Antique Wine Production*, 54; M. Decker, *Tilling the Hateful Earth: Agricultural Production and Trade in the Late Antique East* (Oxford, 2009), 128–29; and P. Asemakopoulou-Atzaka, “Τρύγος και ληνός στα ψηφιδωτά της ύστερης αρχαιότητας. Μαρτυρίες παραστάσεων και πηγών,” in Pikoulas, *Οίνον ιστορώ IV*, 47–76.

62 The winery installations in the Enclosure trench flanked a wide cobbled street (Iverson, “Excavations at the Lower City Enclosure,” 28), and the Large Building installation was also located next to a wide main street (Tsivikis, “A Byzantine Neighborhood in Flux”).

63 Dodd, “Archaeology of Wine Production,” 457.

64 The treading of grapes in theory could have also taken place inside the winepress basins as a first phase of extraction, but we should probably dismiss this possibility, since it would be difficult to tread grapes under the fixed beam; moreover, it would have been a waste of the winepress’s valuable time.

65 Frankel, “Presses for Oil and Wine,” 82–83; Frankel, *Wine and Oil Production*, 147–48; and Anagnostakis, “Περὶ θλίψεων και εκθλίψεων,” 91–92, 116–117.

66 In an older artistic reconstruction of winepress installation G, the pressing basin was depicted as filled with grapes being directly pressed by a pressing board suspended from the beam (Iverson, “Excavations at the Lower City Enclosure,” 116, fig. 1/20).

67 This process would have functioned much like known late Roman winepresses from the Rhine area: K.-J. Gilles, ed., *Neue Forschungen zum römischen Weinbau am Mosel und Rhein* (Trier, 1995), fig. 18, and J.-P. Brun and K.-J. Gilles, “La viticulture antique en Rhénanie,” *Gallia* 58 (2001): 171–72.

68 In Roman times, it was not unusual to encounter wineries with only treading floors. See the examples in Dodd, “Archaeology of Wine Production,” 457–58.

three—all of them part of a single, unified complex—compared to eight winepresses, needs an explanation. Treading floors are much more fragile constructions, so the few existing remains might be an accident of survival, as many more might have been lost. The pressing vats of the winepresses also could have been used for treading the grapes at a first stage, thus balancing the numbers. Finally, we cannot exclude that treading of the grapes also occurred in other areas, inside or outside the city, and that only at a later time were grape remains transferred to the presses.

Fermentation and Storage

After the treading and pressing of the grapes, the next stage was the fermentation of the grape juice into wine. Wine fermentation in Roman and Byzantine practice occurred usually in two stages. Initially, the grape juice was collected in open vessels, where it was left to ferment and naturally “boil” for a few days, usually four to seven. After that, the must was siphoned off into closed vessels for the secondary and longer fermentation, up to four months.⁶⁹

In studies on late antique winepresses, it is often the collection vats themselves (gr. *υπολήνια*) that are identified as the open containers hosting the juice during the first fermentation.⁷⁰ In those cases, the collection vats were rather large, permanent constructions where the must flowed directly from the pressing basins. The unfermented juice was kept there for the first few

days, thus obstructing any use of the winepress and extending the operational time of the entire process.⁷¹

In the wineries of Amorium, the rather limited size of the collection vats makes it highly improbable that they received large quantities of grape must to ferment.⁷² According to advice offered in the *Geoponika*, the collection vats and the fermentation vessels should be rather small for better-quality wine.⁷³ Thus, the grape juice must have been quickly transferred into other fermentation vessels.⁷⁴ We know from medieval sources that initial and secondary fermentation could happen in various containers: clay pots, wooden barrels, pithoi, or even animal skins.⁷⁵ Logistically speaking, it would not have been profitable to limit the use of the entire winepress complex to only three or four times each per grape harvest season.⁷⁶ An operation scheme where the grape must was immediately removed from the collection vats into separate first-stage fermentation vessels could multiply the productivity of the winepresses, as they could be in almost continuous use throughout the harvest season.⁷⁷

If the collection vats at Amorium were not used for the initial fermentation of grape juice, we need to

69 Decker, *Tilling the Hateful Earth*, 133–36; Frankel, *Wine and Oil Production*, 43; and Brun, *Le vin et l’huile dans la Méditerranée antique*, 63–70.

70 Decker, *Tilling the Hateful Earth*, 144; Brun, *Le vin et l’huile dans la Méditerranée antique*, 63–64; D. Van Limbergen, “Figuring Out the Balance between Intra-regional Consumption and Extra-regional Export of Wine and Olive Oil in Late Antique Northern Syria,” in Diler, Şenol, and Aydınoğlu, *Olive Oil and Wine Production in Eastern Mediterranean*, 175; and Zerbini, “Landscapes of Production in Late Antiquity.” For the ethnographic, literary, and artistic evidence of how these presses operated and for the technical terms *lenos* and *hypolenion*, their origin, and use in ancient literature and Byzantine sources, see the exhaustive volume Pikoulas, *Οἶνον ἱστορῶ IV*. For literary evidence of the terms *lenos* and *hypolenion* in particular, see Anagnostakis, “Περὶ θλίψεων καὶ ἐκθλίψεων,” 82–86, 135–37 (papyri), 162–63 (literary texts), and P. Mayerson, “The Meaning and Function of *ληγός* and Related Features in the Production of Wine,” *ZPapEpig* 131 (2000): 161–65. For artistic evidence, see Asemakopoulou-Atzaka, “Τρύγος καὶ ληνός,” 47–76.

71 Dodd, *Roman and Late Antique Wine Production*, 58, and Frankel, *Wine and Oil Production*, 138–58.

72 Similar-size collection vats to those at the Amorian wineries can be seen in many of the Middle Byzantine wineries in Mavrucandere and elsewhere in Cappadocia (Peker, “Agricultural Production,” 46–47). Of the Mavrucandere examples, we single out the Ağaçlık 2 winepress that technically adopts identical solutions to the Amorium winepresses.

73 *Geoponika* 6.3 (Beckh, *Geoponica*, 173–74).

74 A similar process is discussed by Dodd when dealing with the late antique wineries of Delos and Antiocheia ad Cragum (Dodd, *Roman and Late Antique Wine Production*, 56–59, 115–16).

75 Greek and Arabic sources from Egypt as well as archaeological finds attest to the use of wine jars with drilled holes for the fermentation of must; see N. Hansen, “Sunshine Wine on the Nile,” in *Documents and the History of the Early Islamic World*, ed. A. T. Schubert and P. M. Sijpesteijn (Leiden, 2015), 294–96. Skins were used also in the process of wine production for emptying the collection vats (P. Mayerson, “A Note on *O. Mich.* I 249: *λόγος οἶνου κακ(ς)*,” *BASP* 35.3/4 [1998]: 211–13).

76 Zerbini, “Landscapes of Production in Late Antiquity,” §12–21.

77 This practice was common in cases of large producers needing great output, like in the monastery of Abu Mina in seventh-century Egypt. This offers an interesting scale, as archival documents on ostraca from a winery with five winepresses in Abu Mina suggest that the installation could produce up to 60,000 liters of wine (Litinas, *Greek Ostraca from Abu Mina*, 70–72).

think of other suitable containers serving this role. No substantial archaeological evidence is preserved regarding this crucial phase of wine making. Some of the unearthed installations have ancillary spaces that could have been used for storing open pots or casks with the fermenting juice. Another possibility is the existence of larger communally or centrally organized storage areas or depots, but to date, no such building has been identified in the process of archaeological exploration.⁷⁸

Equally, we have little archaeological information on the final stages of the wine's life cycle in Amorium. The storage of matured wine, its circulation and distribution, possibly through transporting, and its consumption are difficult to trace in general. Amphoras have been traditionally treated as indicators par excellence for wine circulation and consumption in the Roman and Byzantine world.⁷⁹ It has long been noted that, although rich in sherds and entire pots of other types of Byzantine pottery, the excavation layers at Amorium dated in the transitional and Middle Byzantine period are devoid of significant quantities of amphora finds.⁸⁰ If not an accident of discovery, this absence shows that in Amorium amphoras were probably not the preferred vessel for storing or moving around foodstuff and wine in particular.⁸¹

78 *Geoponika* 6.2 (Beckh, *Geoponica*, 171), instructs that ὁ οἶκος ὁ ὑποδεχόμενος τοὺς πίθους . . . πόρρω δὲ ἔστω τῆς ληνοῦ, καὶ ἀπηλλάχθω πάσης δυσωδίας (Dalby, *Geoponika*, 150: "the building housing the vats should . . . be a long way from the treading room and free of any bad smells").

79 Although scholarship has recently attempted to nuance wine commerce and transportation beyond the amphora question, an overview of the discussion is offered by J.-P. Brun, "From Oil to Wine? A Balanced View on the Production of the Most Representative Agricultural Products of Antiquity," in *Archaeology and Economy in the Ancient World: Proceedings of the 19th International Congress of Classical Archaeology; Cologne/Bonn, 22–26 May 2018*, vol. 9, *A. Making Wine in Western-Mediterranean; B. Production and the Trade of Amphorae: Some New Data from Italy; Panel. 3.5*, ed. J.-P. Brun, N. Garnier, and G. Olcese (Heidelberg, 2020), 11–12; for a ceramological overview, see A. G. Yangaki, "Quelques réflexions sur le contenu (vin et huile) des amphores proto-byzantines: Données et perspectives de la recherche," in *Identità euromediterranea e paesaggi culturali del vino e dell'olio*, ed. A. Pellettieri (Foggia, 2014), 89–103.

80 Lightfoot, "Excavations at Amorium," 143, and B. Böhlendorf-Arslan, "Die mittelbyzantinische Keramik aus Amorium," in *Byzanz—das Römerreich im Mittelalter*, vol. 2.1, *Schauplätze*, ed. F. Daim and J. Drauschke (Mainz, 2010), 368.

81 Lightfoot, "Business as Usual?," 186–87. Given the expanded excavation trenches at Amorium from 1989 until 2021, it would be

A recent discovery in Amorium, in the area of the Large Building at the west part of the Lower City, a warehouse with more than eleven sealed large and medium-sized pithoi, is quite tempting to identify as a wine depot with specialized wine containers (see above, Fig. 21).⁸² The pithoi were set halfway into the ground, and they were all sealed with clay or stone lids secured airtight with limey mortar. Many of their characteristics and their arrangement resemble *dolia* vessels that would store wine in known Roman wineries, although they lack the careful and organized arrangement in the ground. The area that these pithoi occupy coincides with the position of an older and dismantled winery, that of winepress J, when the room was transformed (with the creation of dividing mudbrick walls) into a storage place for wheat (Fig. 23). So, most of these sealed pithoi were positioned in the depot in the early ninth century and after the cessation of function of the winery. Thus, it is almost impossible, with a lack of any scientific analysis, to positively connect them with storing and fermenting wine, as they are a common find in houses of Amorium and could equally have been used for storing cereal surplus or other dry goods.⁸³

Thus, we need to think of other types of storage vessels that probably left little or no archaeological traces, animal skins or wooden barrels being the best candidates.⁸⁴ A military treatise of the tenth

highly improbable that significant quantities of amphoras will be found in the future.

82 Demirel-Gökalp and Tsvikis, "Understanding Urban Transformation in Amorium" 338–40, and Tsvikis, "A Byzantine Neighborhood in Flux."

83 For pithoi found in the Upper City of Amorium, see C. S. Lightfoot, "Amorium Excavations 1993: The Sixth Preliminary Report," *AnatSt* 44 (1994): 112. For pithoi in the Enclosure trench, see C. Lightfoot, "Trade and Industry in Byzantine Anatolia," *DOP* 61 (2007): 278, and Ivison, "Excavations at the Lower City Enclosure," 55–58.

84 On barrels, see M. McCormick, "Movements and Markets in the First Millennium: Information, Containers, and Shipwrecks," in Morisson, *Trade and Markets in Byzantium*, 91–94. On wine barrels in Byzantine sources, see I. Anagnostakis, "Βυζαντινά οινοβούτια, βουτζία και οι βουτζαράδες του Αράκλoβου στην Φραγκοκρατούμενη Ηλεία," in *Οίνον ιστορώ: Αμπελοοινική ιστορία και αρχαιολογία της ΒΔ Πελοποννήσου*, ed. G. A. Pikoulas (Korakochori, 2001), 89–108. Traditionally, wooden barrels are regarded as taking over the prominence of amphoras as containers in Late Byzantine times: A. G. Yangaki, "Τὰ δὲ σκεύη πάντα μὴ ὁμοειδῶς ἀλλήλοις διεσχηματίσθω, ἀλλὰ τὸ μὲν πίθος, τὸ δὲ ἄμφορεύς, ἕτερον δὲ πινάκιον . . . : Κεραμικά και οι χρήσεις τους," in *Τὸ Βυζάντιο χωρὶς λάμψη: Τὰ ταπεινά αντικείμενα και*



Fig. 23.
Winepress (installation J)
in the Large Building
trench, showing the pivot
stones in situ; the other
elements were remodeled
in the early ninth century
(view from the north).
Photograph courtesy of
the Amorium Excavations
Project, 2019.

century mentions that during overland expeditions the Byzantine army used leather skins for carrying wine on pack animals.⁸⁵ These containers could have been produced locally in considerable quantities for use in the wine industry, more or less like how wine amphoras in other areas were produced centrally and even distributed by the large estate holders to wine producers.⁸⁶

As for wooden barrels, the possibility of using them for early medieval Byzantine wine commerce and distribution, especially overland, has been little assessed so far.⁸⁷ In the post-Roman West, barrels become the preferred vessel, and their use has been related to the

disruption of the great coastal networks after the late third century or even earlier and the heightened importance of inland and river routes, where wooden barrels were a more suitable vessel.⁸⁸ Similar processes might have occurred in later times in the East with the collapse of Egyptian and Levantine commerce after the rise of Islam and the rise of the importance of land routes, especially in Anatolia.⁸⁹ In Byzantine sources, the earlier references to wine barrels date from the early Middle Byzantine era, whereas in the eleventh century, Byzantine barrels already appear as a standard reference, indicating that they had been in use for a long time.⁹⁰

η χρήση τους στον καθημερινό βίο των Βυζαντινών/*Byzantium without Glamour: The Humble Objects and Their Use in the Everyday Life of the Byzantines*, ed. A. G. Yangaki and A. Panopoulou (Athens, 2018), 123.

85 Constantine VII Porphyrogenitus, *Treatise (C)*, lines 137–54, 599–604 (J. F. Haldon, ed. and trans., *Constantine Porphyrogenitus: Three Treatises on Imperial Military Expeditions*, CFHB 28 [Vienna, 1990], 102–4 [commentary, 254], 132 [commentary, 254]).

86 Hickey, *Wine, Wealth, and the State in Late Antique Egypt*, 72–73.

87 In the West there is a growing discussion that “by the early medieval period the amphora had been largely replaced . . . by the barrel,” and thus the archaeological visibility of wine commerce in shipwrecks is significantly altered compared to Roman times (A. Wilson, “Approaches to Quantifying Roman Trade,” in *Quantifying the Roman Economy: Methods and Problems*, ed. A. Bowman and A. Wilson [Oxford, 2009], 219–21).

88 A. Tchernia, “La crise de l’Italie impériale et la concurrence des provinces,” *Les Cahiers du Centre de recherches historiques* 37 (2006): 137–56. Generally, on barrels in the Western Roman world, see E. Marlière, *L’outre et le tonneau dans l’Occident romain* (Montagnac, 2002), and Brun, “From Oil to Wine?,” 10–14.

89 Barrels can actually be much more efficient as liquid containers than amphoras, as they are much lighter and durable; see J. H. Pryor, “Types of Ships and Their Performance Capabilities,” in *Travel in the Byzantine World: Papers from the Thirty-Fourth Spring Symposium of Byzantine Studies, Birmingham, April 2000*, ed. R. Macrides (Aldershot, 2002), 54.

90 Anagnostakis, “Βυζαντινά οινόβουτια.” The Genizah archive refers to vessels that contained “half a Byzantine barrel”; see S. D. Goitein, *A Mediterranean Society: The Jewish Communities of the Arab World as Portrayed in the Documents of the Cairo Geniza*, vol. 1,

Quantifying Amorium Wine Production

An accurate calculation of the production capability of the Amorium wine industry is almost impossible because of the multiple variables and the limited archaeological sources. However, we can still attempt to quantify the production based on methodologies applied on similar material elsewhere, since it is only through quantification that we can get a rough idea of the scale of the phenomenon. Generally, for the quantification of Byzantine wine production, scholars have used two different methods. The first one presupposes that the collection basins were used as fermentation vats and calculates the quantity of the produced wine through the volume of the must that these basins could hold.⁹¹ The second is based on projecting the few figures known from documentary sources, mostly from Early Byzantine Egypt, and combining them with actual winepress vat volumes.⁹² It is obvious that both these approaches have pros and cons, and none can actually offer a definite estimate, although they are still useful tools.

In the case of Amorium, initially we must consider the approximate number of wineries in operation during the period between the seventh and ninth centuries. We have archaeological evidence for eleven such installations (eight winepresses and three treading floors) scattered in three different locations of the Lower City. Along with those, several screw press weights have been documented around the site, probably coming from other, still unexcavated winepresses. The Lower City trenches excavated so far represent less than 10 percent of the total fortified urban area, but still wineries were found everywhere. Such a density makes it highly probable that more wineries existed inside the city walls, still waiting to be explored. We cannot establish an exact number, but by projection, we can postulate that at least a few dozen more wineries could have existed

inside the walled city, making the total number considerably greater.

Clustering of winepresses is not an uncommon phenomenon. It has been studied in late antique Syria, where small or medium-sized villages with ten or fifteen installations each were involved in industrial-scale production of wine.⁹³ Also in Middle Byzantine Cappadocia, in two sites at Mavrucandere, a total of fourteen installations have been located and have been connected with the needs of the Byzantine army.⁹⁴ At another site in Phrygia, that of Hendek Kale, nine setting stones for the wooden levers and fourteen rectangular counterweight stones have been documented on the surface, all of them belonging to presses, probably winepresses.⁹⁵ However, most known examples of wineries clustering seem to be connected to rural areas and village settlements. The situation in Amorium, therefore, is unique, since the concentration of wineries is observed inside a fortified urban settlement.

In the Syrian wineries studied by Andrea Zerbini, it was estimated that three (probably post-sixth century) winepresses of the lever-and-screw type had an annual average production of approximately 4,000 liters of wine; the estimate was based on the size of their collection vats, under the supposition that these operated for only three fillings per harvest.⁹⁶ Another well-documented example, both textually and archaeologically, is the seventh-century winepress at the monastery complex of Abu Mina in Egypt. According to the *ostraka* dossier, this winepress received the grape harvest of four to five hundred different vine growers in a period of two weeks, and its annual yield is estimated as between 30,000 and 60,000 liters of wine.⁹⁷ The Abu Mina winery has been also excavated, offering a concise idea of its

Economic Foundations (Berkeley, CA, 1967), 321. This reference is discussed also in Pryor, "Types of Ships," 53.

91 Dodd, *Roman and Late Antique Wine Production*, 64–67, 117–22; Brun, *Le vin et l'huile dans la Méditerranée antique*, 63; Decker, *Tilling the Hateful Earth*, 144; Van Limbergen, "Figuring Out the Balance," 175; and Zerbini, "Landscapes of Production in Late Antiquity," §12–21.

92 Litinas, *Greek Ostraca from Abu Mina*, 70–72; Hickey, *Wine, Wealth, and the State in Late Antique Egypt*; L. A. Schachner, "Economic Production in the Monasteries of Egypt and Oriens, AD 320–800" (PhD diss., University of Oxford, 2006), 188–89.

93 Zerbini, "Landscapes of Production in Late Antiquity," and Van Limbergen, "Figuring Out the Balance," 175. For Antioch as a market for wine and its relationship to the surrounding region with respect to wine production, see A. U. De Giorgi, *Ancient Antioch: From the Seleucid Era to the Islamic Conquest* (Cambridge, 2016), 119–31.

94 Peker, "Agricultural Production."

95 J. Bennett and B. Claasz Coockson, "Hendek Kale: A Late Roman Multiple Lever Press Site in Western Asia Minor," *Antiquity Project Gallery* 83.319 (2009), <http://www.antiquity.ac.uk/projgall/bennett319/>.

96 These are wineries P9, P12, and P27 in Dehes and Si'a (Zerbini, "Landscapes of Production in Late Antiquity," table 1).

97 Schachner, "Economic Production in the Monasteries of Egypt and Oriens," 70–72.

form and productive capabilities; it included five winepresses of various sizes with spacious collecting vats.⁹⁸

Based on the aforementioned examples, we may attempt to assess the possible magnitude of wine production at Amorium. The Amorian winepresses resemble in technology and form those on the Syrian plateau with a possible average output of about 1,500 liters per use each. Since at Amorium the first stage of fermentation probably did not take place in the collection vats, the continuous operation of the presses was unobstructed. Thus, the estimated output of about 1,500 liters per use can be multiplied considerably, reaching up to the number of harvest days or even more, if the winery were used more than once daily.⁹⁹ We cannot know if a systematic wine-production operation like in the Abu Mina monastery was also taking place in Amorium, but this could offer a satisfactory explanation for not using collection vats as initial fermentation vessels, thus safeguarding the continuous use of the winery.¹⁰⁰

If it was the case that the Amorium winepresses were in operation for a considerable number of days, if not daily, during the four weeks of the harvest season, they could have been producing something between 10,500 liters of wine (if operating daily over a period of seven days of the harvest season) to 42,000 liters of wine (if operating daily for the twenty-eight days of harvest), or even more. By projecting this figure to each Amorium winepress, we see that the annual production of the eight excavated winepresses alone (excluding the

three treading floors) could rise to a total of between 84,000 and 336,000 liters.

This number represents only the excavated wineries and is quite substantial in itself. If the wineries of Amorium were as numerous and widespread as the excavated sample shows, the total amount could rise considerably, two or even three times more. These numbers, of course, cannot be proven in any way and remain suggestive, providing us with a possible order of magnitude for local wine production.

To sum up, the volume of the wine produced in Amorium cannot be easily estimated with accuracy, but it was certainly quite substantial. Such large-scale production must have exceeded local population needs and was probably intended for a wider market; furthermore, in a period like the seventh and eighth centuries when most of the economy was controlled or stimulated by the state, it may be safely assumed that this kind of production was intended to satisfy, directly or indirectly, state commissions.

Winepresses and the Investment in Money and Material

As discussed earlier, wineries in Amorium were part of newly built constructions, especially created in the seventh century. These units were erected over the Early Byzantine urban fabric, mostly replacing and partly reusing preexisting structures. The agrarization of urban life and the establishment of manufacturing installations inside the urban environment were some of the developments signaling the transition from late antique to medieval cities all across the Byzantine Empire.¹⁰¹ Yet a careful look at the evidence shows that the building of winepresses in Amorium must have been a particularly demanding and expensive investment, dictated

98 On the excavation of Abu Mina's main winery, see P. Grossmann, F. Arnold, and J. Kościuk, "Report on the Excavations at Abu Mina in Spring 1995," *BSAC* 36 (1997): 87–90; P. Grossmann and J. Kościuk, "Report on the Excavations at Abū Mīnā in April 2014," *BSAC* 53 (2014): 56–61; and P. Grossmann, *Abū Mīnā*, vol. 4, *Das Ostraka-Haus und die Weinpresse* (Wiesbaden, 2019), 31–52. It is not uncommon for wineries to have more than one winepress, which is explicitly mentioned (e.g., the second or third *ληνός*) in papyri from late Roman Egypt; see Mayerson, "Meaning and Function of *ληνός*," 165, and Anagnostakis, "Περὶ θλίψεων καὶ ἐκθλίψεων," 85, 135–37.

99 The papyri describing production in the seventh-century winepress of Abu Mina (Litinas, *Greek Ostraca from Abu Mina*, 70–72) or that of the wineries at the estate of Apion in Aphrodito (Hickey, *Wine, Wealth, and the State in Late Antique Egypt*, 90–98) imply that wine pressing probably happened more than once per day during harvest days.

100 We see the same arrangement in one of the Byzantine winepresses (Ağaçlık 2) in Mavrucandere in Cappadocia, where the collection vat is small and a number of larger fermentation vats were cut on the sides of the room to accept the freshly pressed grape juice (Peker, "Agricultural Production," 45, fig. 5).

101 For some recent views on the ruralization of Byzantine urban settlements, see L. Brubaker and J. F. Haldon, *Byzantium in the Iconoclast Era, c. 680–850: A History* (Cambridge, 2011), 531–72; P. Niewöhner, "Urbanism," in *The Archaeology of Byzantine Anatolia: From the End of Late Antiquity until the Coming of the Turks*, ed. P. Niewöhner (New York, 2017), 46–48; F. Curta, "Postcards from Maurilia, or the Historiography of the Dark-Age Cities of Byzantium," *Post-Classical Archaeologies* 6 (2016): 93–95; and Tsivikis, "Messene and the Changing Urban Life," 40–49. For the city of Amorium in particular, see Lightfoot, "Survival of Cities in Byzantine Anatolia"; C. S. Lightfoot, "Amorium," in Niewöhner, *Archaeology of Byzantine Anatolia*, 333–41; Ivison, "Amorium in the Byzantine Dark Ages"; and Tsivikis, "Amorium and the Ever-Changing Urban Space."

most probably by specific, newly occurring needs. If this were not the case, it would have been much easier for Amorians to use simpler winepress solutions, like the rock-cut winepresses that are so popular in the area, rather than investing in newly built, freestanding constructions.¹⁰² Furthermore, wine-producing installations were usually built in rural areas, in close proximity to the vineyards, in order to limit the cost and risks of transporting the grapes.¹⁰³ Additionally, the construction and constant maintenance of elaborate machines like winepresses demanded specialized knowledge and the presence of trained craftsmen to guarantee their proper operation.¹⁰⁴ The same applies for the carving of the screw weights, the cutting and installation of the huge stone slabs used in various vats, and the creation of the specialized hydraulic mortars.¹⁰⁵ At the same time,

intensive wine production requires considerable investment of time and labor in the vineyards, since the vine needs five to seven years to produce its first fruit and, after that, it requires a series of tasks annually in order to be kept productive.¹⁰⁶

All the above indicate that wine making in Amorium was a considerable, long-term investment of surplus, entailing the conscious decision to sacrifice valuable urban space and undertake a great financial commitment for the creation and especially the maintenance of both wineries and vineyards. It also means that a substantial part of the arable land around the city was dedicated to viticulture, limiting the productive cultivation of other crops such as wheat and barley. This choice entailed a great risk, since cereals can easily be resown and ripen within a seasonal cycle, whereas vine needs a considerably longer period to be fruitful again in case of destruction either by man or by inclement weather. The seventh and eighth centuries were times of insecurity for much of Anatolia because of the Byzantine–Arab wars.¹⁰⁷ Moreover, literary sources mention that as part of the warfare, vineyards were often intentionally destroyed.¹⁰⁸ In other historical contexts, political insecurity has been regarded as one of the reasons that small

102 On rock-cut installations, see Frankel, *Wine and Oil Production*, 51–60. On Asia Minor, see E. Dodd, “Late Roman Viticulture in Rough Cilicia: An Unusual Wine-Press at Antiochia ad Cragum,” *JRA* 33 (2020): 471–72, n. 26, with extensive literature on the subject, and Sivas, “Wine Presses of Western Phrygia.” On wooden and portable presses, see A. Diler, “Olive Oil and Wine Production of the Halikarnassos Peninsula in Karia,” in Aydınoğlu and Şenol, *Olive Oil and Wine Production in Anatolia*, 160. In Phrygia, a winepress inside the settlement of Hierapolis has been dated to the eleventh to twelfth centuries (P. Arthur, *Byzantine and Turkish Hierapolis [Pamukkale]: An Archaeological Guide* [Istanbul, 2006], 134–36).

103 Dodd, *Roman and Late Antique Wine Production*, 33–34, 113; Zerbini, “Landscapes of Production in Late Antiquity,” §15–19; and Van Limbergen, “Figuring Out the Balance,” 170–73.

104 T. Lewit, “Invention, Tinkering, or Transfer? Innovation in Oil and Wine Presses in the Roman Empire,” in *Capital, Investment, and Innovation in the Roman World*, ed. P. Erdkamp, K. Verboven, and A. Zuiderhoek (Oxford, 2020), 324–27, and Varinlioglu, “Trades, Crafts, and Agricultural Production,” 186–87. Documents from Roman Egypt mention specialized workers who operated the mechanical presses (στυμφυλοιοί) and craftsmen hired to maintain the devices (Dzierzbicka, *OINOS*, 186–88); for related terms, see also Anagnostakis, “Περὶ θλίψεων καὶ ἐκθλίψεων,” 85, 156. A press weight found at Kalecik/Malos carries an inscription with the name of the craftsman (τεχνίτης) who constructed the press to which the weight belonged (Mitchell et al., “Church Building and Wine Making,” 214–15).

105 A Greek cross cut on a circular limestone press weight (Am. Inv. T2016) probably indicates that the press was considered a highly prized investment; see Lightfoot, “Excavations at Amorium,” 141–42, figs. 6–7. Mitchell et al., “Church Building and Wine Making,” 205, based on dozens of examples from Central Anatolia, suggest that Christian decoration of press weights was a local custom and a distinctive regional feature of Central Anatolia. Early Byzantine press weights with Christian decoration can also be found elsewhere, like in the Aegean (Dodd, *Roman and Late Antique Wine Production*,

108–10), but Middle Byzantine ones seem to be mostly represented in Anatolian examples.

106 T. Lewit, “‘Terris, vineis, olivetis . . .’: Wine and Oil Production after the Villas,” *European Journal of Postclassical Archaeologies* 10 (2020): 195–96; G. C. Maniatis, “The Byzantine Winemaking Industry,” *Byzantion* 83 (2013): 232–33; and Gorny, “Viniculture and Ancient Anatolia,” 146.

107 R.-J. Lilie, *Die byzantinische Reaktion auf die Ausbreitung der Araber: Studien zur Strukturwandlung des byzantinischen Staates im 7. und 8. Jahrhundert* (Munich, 1976), 183–200, and J. Haldon, *The Empire That Would Not Die: The Paradox of Eastern Roman Survival, 640–740* (Cambridge, MA, 2016), 26–78.

108 According to Middle Byzantine military treatises, the destruction of the vineyards was a common tactic in the wars of the period: “If it should happen that out in front of the city there are parks, vineyards, and trees, they should be cut down, uprooted, and set on fire” (*Book on Tactics*, §21 [G. T. Dennis, ed. and trans., *Three Byzantine Military Treatises*, CFHB 25 (Washington, DC, 1985), 304–5]). One characteristic case is the destruction of the vineyards and trees around the besieged Adana by Nikephoros Phokas: “He set up camp there near the town [i.e., Adana in Cilicia], chopped down vines, trees, and everything that bore fruit, and razed the elegant and beautiful suburbs” (Nikephoros II Phokas, *Skirmishing*, §20 [Dennis, *Three Byzantine Military Treatises*, 218]). See also G. Dagron and H. Mihaescu, eds. and trans., *Le traité sur la guérilla (De velitatione) de l’empereur Nicéphore Phocas (963–969)* (Paris, 1986), 113, and Anagnostakis, *Βυζαντινός οινικός πολιτισμός*, 44, 114, nn. 153–54.

vine cultivators ceded their “prerogative of production to a central administration or the large landowners.”¹⁰⁹ Accordingly, in a period when war was endemic in Anatolia and the vineyards around Amorium faced constant threat, it is possible that such high-risk and demanding investments in agrarian production, like the winepresses, were either part of state-oriented projects or funded by powerful agents capable of taking the risk in order to extract a profit.¹¹⁰ Unfortunately, it is still unclear who exactly was responsible for the investment, but we can say without a doubt that it could have only been viable in connection to a steady and broad-based demand for wine.¹¹¹

The Historical Framework of Amorium in the Seventh to Ninth Centuries

In order to understand the circumstances under which Amorium became a wine-production center, we need to examine the evolution of the settlement, principally in the period between the seventh and ninth centuries. By the end of the sixth century, Amorium conveyed the basic features of a typical Early Byzantine inland Anatolian town: it was a fortified local administrative and ecclesiastical center, supported by a community which was characterized by social stratification and economic differentiation based on the exploitation of land.¹¹² However, the rapid expansion of Islam in the first half of the seventh century set in motion conditions that transformed Amorium into a major military hub. The turning point was 636, when the Byzantine army suffered a serious defeat by the Arabs at the Yarmuk River. This failure led to significant territorial losses for Byzantium encompassing areas broadly corresponding to modern Syria, Lebanon, Israel, Palestine, and

northern Egypt.¹¹³ After this great loss, the Byzantine field armies that had been active against the Arabs in these regions were forced to withdraw behind the natural barrier of the Taurus and Anti-Taurus Mountains. As part of this relocation, the army of the East (the *Anatolikoi*) was stationed in southern and central Asia Minor, and Amorium was gradually converted to the base of the commander of the army (*strategos*).¹¹⁴

The concentration of officials and soldiers in the area after the middle of the seventh century made Amorium a military stronghold in Byzantium’s external and internal struggles.¹¹⁵ Moreover, in 820, a local military man, Michael II, became emperor of Byzantium, and his dynasty, the Amorian, was named after the city. However, less than twenty years later, Caliph al-Mu‘taṣim launched a campaign against Byzantium which ended with the sack of Amorium and the capture of many of its inhabitants.¹¹⁶ After this destruction, the city was partially rebuilt, but following wider transformations, it lost its significance as one of the most important military and administrative centers in Anatolia.¹¹⁷

The Role of Amorium in the Provisioning of the Byzantine Army: The Sigillographic Evidence

The choice of the Byzantine government to transform Amorium into a major military base has been attributed among other factors to its strategic location, astride the main highway connecting Constantinople with the new

109 Gorny, “Viniculture and Ancient Anatolia,” 149.

110 The installations could have been a community enterprise, possibly owned by an individual or collective and rented out to independent users to process their produce. Lewit, “Invention, Tinkering, or Transfer?,” 339–41, provides examples of varying social constructs in which presses existed, including extensive ethnographic evidence for the shared use of press installations by multiple farmers or those owned by wealthy villagers and leased out. See also Anagnostakis, “Noms de vignes et de raisins,” 35–60.

111 On the economics of viticulture and wine making, see Maniatis, “Byzantine Winemaking Industry,” 239–43.

112 Lightfoot, “Amorium”; Ivison, “Amorium in the Byzantine Dark Ages”; and Tsvikis, “Amorium and the Ever-Changing Urban Space.”

113 For a detailed analysis of the period, see W. E. Kaegi, *Byzantium and the Early Islamic Conquests* (Cambridge, 1992).

114 J. F. Haldon, *Warfare, State, and Society in the Byzantine World, 565–1204* (London, 1999), 73–77; Haldon, *The Empire That Would Not Die*, 266–71; and Ivison, “Amorium in the Byzantine Dark Ages,” 25–34.

115 The army of the Anatolikoi also participated in the civil wars of the period. Together with the neighboring army of the Thrakesioi, the Anatolikoi supported Constantine V (741–775), who had settled in Amorium when his brother-in-law, Artabasdos, occupied Constantinople for more than a year (between 741 or 742 up to November 743) (Nikephoros, *Short History*, §64 [C. A. Mango, ed. and trans., *Nikephoros Patriarch of Constantinople: Short History*, CFHB 13 (Washington, DC, 1990), 134], and Theophanes, *Chronographia*, AM 6233 [C. de Boor, ed., *Theophanis Chronographia* (Leipzig, 1883), 1:414–15]).

116 J. Signes Codoñer, *The Emperor Theophilos and the East, 829–842: Court and Frontier in Byzantium during the Last Phase of Iconoclasm* (Farnham, 2014), 279–312.

117 C. S. Lightfoot, “Doukas and Amorium: A Note,” *JÖB* 46 (1996): 337–40.

frontier.¹¹⁸ In addition, John Haldon, who has studied the process of the relocation of the Byzantine army in Anatolia after the Battle of Yarmuk, has proposed that we should comprehend it as part of a “well-thought-out plan through which the empire could continue to maintain and support substantial numbers of troops.”¹¹⁹ In other words, one of the main reasons that transformed Amorium into a major military base was the ability of the city and its hinterland to provide for the army.

Given the importance of wine in the provisioning of the army, not just for nutritional but also for medical and recreational purposes, as we shall see in the next section of our study, it looks, indeed, very attractive to connect the increased wine production at Amorium with the provisioning of the army stationed in and around the city. Such a theory, however, must be examined in connection with the economic institutions of the empire during the very demanding seventh and eighth centuries, when a deep administrative reform, from the model of the late Roman provinces to the medieval thematic system, occurred. The available contemporary literary sources are almost silent concerning these crucial changes, and this gap can be filled by sigillography.

Valuable hints relating to the economy of the Byzantine state during these centuries are provided by the seals issued by (a) the *genikoi kommerkiarioi* of the *apothekai* (these are attested between ca. 654–659 and ca. 730/1) and (b) the “impersonal” state institution of the imperial *kommerkia* (attested between ca. 730/1 and ca. 832/3).¹²⁰ These lead seals that authenticated

and secured the correspondence of state officials with the capital are coin-like *cartes de visite* bearing the portrait(s) of the ruling emperor(s) and a legend that offers the area of jurisdiction of the specific bureau and the indictional year during which the seal was valid.

The *genikoi kommerkiarioi* were centrally appointed fiscal officials of high rank and status (often holding consecutive appointments), responsible for the collection and redistribution of resources managed from Constantinople. They have been characterized as the financial crisis managers of the period, responsible for the provisioning of military campaigns, supplying the capital, and controlling the movement of all commodities (precious and non precious) in and out of the empire.¹²¹ The first seals of the *kommerkiarioi*, which appear under Justinian I (after 538), mention the names, dignities, and functions of one or two officials, sometimes accompanied by the area(s) of their jurisdiction. Between 654–659 and until 729/30, the *kommerkiarioi* are associated with the *apothekai* of a specific late Roman province or groups of late Roman provinces, while from 673/4 onward, their seals bear an indiction.¹²² In the absence of relevant literary sources, any theories on the role, function, and purpose of the *apothekai* during the seventh and eighth centuries rely solely on the seals issued by the *kommerkiarioi* in charge of them. Various hypotheses have been proposed on the interpretation of this material, but the theory that has provoked the most lively scholarly debate is the one first put forward by Michael Hendy and subsequently supported by Haldon, who believe that the introduction of the institution of the *apothekai* to the provinces aimed at equipping the soldiers and/or supplying them with provisions.¹²³ This theory seems to

118 Ivison, “*Amorium* in the Byzantine Dark Ages,” 33–34, and C. S. Lightfoot, “*Amorium*: Facts, Myths, and Misconceptions,” in Lightfoot and Ivison, *Amorium Reports* 3, 478–79.

119 Haldon, *The Empire That Would Not Die*, 269.

120 On the first *kommerkiarioi* and their role, see the valuable study of F. Montinaro, “Les premiers commerçants byzantins,” *Travaux et mémoires du Centre de recherche d’histoire et civilisation de Byzance* 17 (2013): 351–538. A very important discussion on the economic institutions of the *apothekai* and the imperial *kommerkia* with all the previous references can be found in W. Brandes, *Finanzverwaltung in Krisenzeiten: Untersuchungen zur byzantinischen Administration im 6.–9. Jahrhundert* (Frankfurt, 2002), 291–309 (on the *apothekai*), 365–94 (on the imperial *kommerkia*). See also Brubaker and Haldon, *Byzantium in the Iconoclast Era*, 684–95 (on the *apothekai*), 695–705 (on the imperial *kommerkia*). For Asia Minor in particular, see E. Ragia, “The Geography of the Provincial Administration of the Byzantine Empire (ca. 600–1200): I.1. The *Apothekai* of Asia Minor (7th–8th c.),” *Byzantina Symmeikta* 19 (2009): 195–245.

121 Brubaker and Haldon, *Byzantium in the Iconoclast Era*, 695.

122 Montinaro, “Les premiers commerçants byzantins,” 365.

123 Hendy, *Studies in the Byzantine Monetary Economy*, 626–40, 654–62. Brubaker and Haldon, *Byzantium in the Iconoclast Era*, 687–88, note that although the priority of the *apothekai* had been Constantinople itself, their association in date, place, and event with various military undertakings “remains quite striking.” See also more recently, Haldon, *The Empire That Would Not Die*, 259–66, where it is argued that the *kommerkiarioi* were state officials in charge of feeding the Byzantine army. On a summary of the main theories concerning the *kommerkiarioi* and the *apothekai*, see Montinaro, “Les premiers commerçants byzantins,” 354–64. Federico Montinaro expresses great skepticism about Haldon’s theory on the role of the *kommerkiarioi* as state agents responsible for the provisioning of the army; see F. Montinaro, “Killing ‘Empire’: Goldilocks and the Three

be supported also by the geographical distribution of the apothekai, since some of them are directly associated with specific military operations, while the earliest among them are located in eastern Asia Minor, which suffered the results of the massive attacks by the Persians and then by the Arabs; in contrast, apothekai in western Asia Minor appear after the late seventh century.¹²⁴ What remains unclear is how this objective was achieved and what the exact binding relations were among (a) the local producer/artisan, (b) the warehouse (*apotheke*), and (c) the soldier. Warren Treadgold, taking for granted that the distribution of landholdings to soldiers had started already in the mid-seventh century (thus, soldiers were recruited among the landowners), has argued that the soldier-farmers were able to exchange their agricultural produce at the apothekai located in their districts and thus obtain their weapons.¹²⁵ According to Wolfram Brandes, the apothekai were a state service subject to the *genikon logothesion* (finance ministry), and their objective was to collect taxes in kind, which were then used to supply the army.¹²⁶

On this basis, can we assume that the archaeological evidence on wine production at Amorium suggests the existence of an apotheke in the city? First of all, as already noted, all the known seals of the *genikoi kommerkiarioi* in charge of an apotheke are associated in their overwhelming majority with one or more late Roman provinces, very rarely with specific cities.¹²⁷ Still, if we take into account that an apotheke was “probably a building or part of a building, a room where various things could be (safely, we would add)

deposited,”¹²⁸ then such a building should have been erected in a walled and well-guarded area, located on or near an important communication network that would facilitate both the collection and the redistribution of the collected goods. The favorable position of Amorium on the crossing of important highways leading to Constantinople (to the west) and the Cilician Gates (to the east) has already been discussed above. The Lower City acquired its first circuit wall under Zeno (r. 474–491) or Anastasios (r. 491–518), and, as noted already, the sophisticated and consistent building techniques employed in the Lower City walls and towers “certainly point to a state initiative . . . [indicating] that the Amorium fortifications are certainly part of a new push in state-sponsored fortifications in Anatolia as part of an evolving strategy.”¹²⁹ Thus, Amorium had all the credentials to house an apotheke, although its physical remains have not been traced as of now.

The geographical distribution of the seals issued by *kommerkiarioi* of the apothekai in Asia Minor indicates that eastern Asia Minor, “which suffered the results of the massive attacks by the Persians and later the yearly invasions of the Arabs, was the ground where the new institution of the warehouses was first put into effect” and that “a good number of seals concern the eastern war zones,” an observation that “points with surprising clarity to a possible military orientation of the apothekai.”¹³⁰ Among the known lead seals issued by *kommerkiarioi* of the apothekai, the ones that could be connected to Amorium are those concerning the neighboring late Roman provinces of Phrygia Salutaris (Amorium was always regarded as part of Greater Phrygia in the Roman and Early Byzantine periods), Galatia II (Amorium was added to this province upon its creation in 396–399), and Lycaonia (which was fully incorporated in the Anatolikon theme), issued by the following officials (in chronological order): Theodoros, hypatos and *genikos kommerkiarios* of the apotheke of Galatia (654–659); Stephan, *patrikos* (and *genikos kommerkiarios*?) of the apotheke of Galatia I and II (659–668),

Byzantine *Kommerkiarioi*,” *The Journal of European Economic History* 46.2 (2017): 165–72.

124 Ragia, “Geography of the Provincial Administration,” 200–201. Cf. also Brubaker and Haldon, *Byzantium in the Iconoclast Era*, 685: “the seals of this institution seem in several cases to follow the warfare.”

125 W. Treadgold, *Byzantium and Its Army, 284–1081* (Stanford, CA, 1995), 179–86.

126 Brandes, *Finanzverwaltung in Krisenzeiten*, 291–309. In documents from seventh-century Egypt, wine also “served as a commodity to meet the obligations imposed by the state (taxes)” (Schachner, “Economic Production in the Monasteries of Egypt and Oriens,” 186).

127 Among the 165 entries concerning seals of *kommerkiarioi* in charge of apothekai compiled by Montinaro (“Les premiers commerçants byzantins,” 443–515), only 38 refer to apothekai associated with a city, either on its own or combined with one or more provinces; 22 of these entries refer to the apotheke of Constantinople.

128 Brandes, *Finanzverwaltung in Krisenzeiten*, 291: “wahrscheinlich ein Gebäude oder einen Gebäuteteil, einen Raum . . . , wo die verschiedensten Dinge deponiert worden konnten” (trans. authors).

129 Tsivikis, “Amorium and the Ever-Changing Urban Space,” 199–201. This is also discussed in Ivison, “*Amorium* in the Byzantine Dark Ages,” 35.

130 Ragia, “Geography of the Provincial Administration,” 200–201.

Kosmas, apo hypaton and genikos kommerkiarios of the apotheke of Lycaonia (690/1); Georgios, apo hypaton of the *andrapoda* (slaves) of Galatia II (694/5), who may be the same as Georgios, apo hypaton of the apotheke of the *andrapoda* of Phrygia Salutaria (694/5); Georgios, patrikios, and Theophylaktos, general kommerkiarioi of the apotheke of Galatia II (706–708); and Theophanes, patrikios, imperial protospatharios, general logothetes, and kommerkiarios of the apotheke of Bithynia, (Phrygia) Salutaria, and (Phrygia) Pakatiane (727/8 and 728/9). It is worth noting the presence of *andrapoda* in Galatia II and Phrygia Salutaria in 694/5. Are these slaves the workforce that carried out the necessary agricultural and construction works connected to the implementation of a new central policy in the provisioning of the army? If so, they could have participated also in the construction and operation of the wine installations at Amorium.¹³¹

After these seals, the wider area where Amorium is situated reappears on the seals issued by the impersonal state financial institution of the βασιλικά κομμέρκια (imperial kommerkia) from the 730s onward. These seals continue to bear the imperial portrait and an indicational year, but they no longer feature the names of high-ranking genikoi kommerkiarioi in charge of apothekai; instead, they are issued in the name of the (impersonal) imperial kommerkia of (in the majority of cases) a province or a group of provinces, or military commands.¹³²

Table 2, which brings together, in chronological order, a list of forty seals issued by imperial kommerkia specifically related to Asia Minor, offers several

interesting observations.¹³³ It is worth noting that this list begins with four specimens all issued in 695–697 by (still) an apotheke of the imperial kommerkia (of Helenopontos and of Asia, Karia, and Lykia), marking thus the final passage from the system of apothekai/warehouses under the supervision of specific kommerkiarioi to the system of the impersonal imperial kommerkia. More importantly, however, we see that the three old Roman provinces of Phrygia Salutaria, Galatia II, and Lycaonia could be connected to Amorium under the system of the apothekai supervised by kommerkiarioi (as discussed above); now, in the new system of the impersonal imperial kommerkia, it is only the province of Phrygia Salutaria (in combination with Bithynia and Phrygia Pakatiane) that reappears, and this happens only for two consecutive years, in 731/2 and 733/4, but never again thereafter. In fact, immediately afterward, in 734/5, we encounter for the first time the Anatolikoi on the two seals of the imperial kommerkia “of the eparchiae of the Anatolikoi,” obviously referring to the old late Roman provinces where this army was stationed (note that the same expression is also used for Opsikion in 745/6; see Table 2). Ten years later (in 744/5), we encounter the seal of the imperial kommerkia of (this time) “the stratega of the Anatolikoi” (in Table 2, compare the similar expression used for the Thrakesioi in 741/2, 744/5, and 745/6), while from 747/8 onward (as indicated currently by the available material), the seals are issued by the imperial kommerkia of (simply) “the Anatolikoi.” This gradual change in the nomenclature employed by the official Byzantine administration is indicative, in our view, of the gradual transformation to yet another new system, that of the themes. The simple term “Anatolikoi” that appears on the seals of the imperial kommerkia from 747/8 onward should be understood, in our view, as a well-known geographical entity identified by this military command; in fact, we would be very tempted to regard the year 747/8 as the terminus ante quem for the creation of the theme of the Anatolikoi.

133 Table 2 is an excerpt of a catalogue including 119 (currently known to us) seals of imperial kommerkia, published in Karagiorgou, “Sigillographische Spuren,” 258–76. Specimens with the prefix “BZS” in the column “Present location” are kept in the sigillographic collection of Dumbarton Oaks in Washington, DC. In the column “References,” we render in bold those references (if more than one) or comments that propose and/or further explain the date that appears in the column “Date”; “n/a” stands for “not available.”

131 On the fluctuating borders of these provinces, especially during the Early Byzantine period, and the administrative status of Amorium, see *TIB* 4:40, 42, n. 1, 59, and 123. On the seals enumerated here, see Montinaro, “Les premiers commerciaux byzantins,” nos. 4, 8, 78, and 112 (Galatia), 57 (Lycaonia), and 76, 160, and 164 (Phrygia Salutaria).

132 Important discussions on the imperial kommerkia with all previous references are included in Brubaker and Haldon, *Byzantium in the Iconoclast era*, 696–97; Ragia, “Geography of the Provincial Administration,” 218–25; and Brandes, *Finanzverwaltung in Krisenzeiten*, 365–94, 511–64 (Appendix I), 594–95 (Appendix VII), which should take into account the remarks by Montinaro, “Les premiers commerciaux byzantins,” 370, n. 45. On a recently updated list of the seals issued by the imperial kommerkia, see O. Karagiorgou, “Sigillographische Spuren der Hexapolis von Hellespontos,” in *Anekdotia Byzantina: Studien zur byzantinischen Geschichte und Kultur; Festschrift für Albrecht Berger anlässlich seines 65. Geburtstags*, ed. I. Grimm-Stadelmann, A. Riehle, R. Tocci, and M. M. Vučetić, *Byzantisches Archiv* 41 (Berlin, 2023), 245–76.

Table 2. Catalogue of the Known Seals of Imperial Kommerkia in Asia Minor

Note: Underlined entries are directly relevant to Amorium and its hinterland.

Date (ind.)	Imperial Kommerkia of . . .	Present Location	References
695–697 (9 and 10)	Helenopontos (the apotheke of)	BZS.1955.1.4402	Montinaro, “Les premiers commerciaux byzantins,” no. 89
695–697 (9 and 10)	Asia, Karia, and Lykia (the apotheke of)	Paris, Bibliothèque nationale de France (Zacos) 730	J.-C. Cheynet, “Quelques nouveaux sceaux de commerciaux,” in <i>Trade in Byzantium: Papers from the Third International Sevgi Gönül Byzantine Studies Symposium</i> , ed. P. Magdalino and N. Necipoğlu (Istanbul, 2016), no. 10
		Berlin, Münzkabinett	Montinaro, “Les premiers commerciaux byzantins,” no. 90
		Private coll. Savvas Kofopoulos 2518 (Lesbos)	J.-C. Cheynet, <i>Les sceaux byzantins de la collection Savvas Kofopoulos</i> , vol. 1 (Paris, 2022), no. 3.56
730/1 (14)	Asia and Karia	Private coll. Yavuz Tatış 2563 (İzmir)	J.-C. Cheynet, <i>Les sceaux byzantins de la collection Yavuz Tatış</i> (İzmir, 2019), no. 3.11
730–741? (n/a)	Amastris up to the (Cimmerian?) Bosporus	Paris, Bibliothèque nationale de France, Thierry 174	Cheyne, “Quelques nouveaux sceaux de commerciaux,” no. 14
731/2 (15)	Bithynia, (Phrygia) Salutaria, (Phrygia) Pakatiane	n/a (ex-Zacos coll.)	G. Zacos and A. Vegler, <i>Byzantine Lead Seals</i> (Basel, 1972), no. 243. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 553, no. 213
731/2 (15)	Hexapolis (Kato) von Hellespontus	Private coll. Dr. D. Theodoridis 789 (Munich)	Karagiorgou, “Sigillographische Spuren”
731/2 (15)	Lydia	Private coll.	See Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , no. 213B
732/3 (1)	Asia	n/a (ex-Zacos coll.)	Zacos and Vegler, <i>Byzantine Lead Seals</i> , no. 246; <i>Byzantine Seals from the Collection of G. Zacos</i> , part 1, Spink, Auction 127 (London, 1998), no. 14; see also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 554, no. 216
733/4 (2)	Bithynia, (Phrygia) Salutaria, (Phrygia) Pakatiane, and Lydia	BZS.1951.315.1738 (ex-Zacos coll.)	Zacos and Vegler, <i>Byzantine Lead Seals</i> , no. 248a, and <i>DOSeals</i> 3, no. 24.4. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 554, no. 218
		n/a (ex-Zacos coll.)	Zacos and Vegler, <i>Byzantine Lead Seals</i> , no. 248b
		Hannover, Museum August Kestner L7.2005 (=ex-Zarnitz coll. 1063)	W. Seibt, <i>Ein Blick in die byzantinische Gesellschaft: Die Bleisiegel im Museum August Kestner</i> (Rahden, 2011), no. 8
734/5 (3)	<u>Anatolikoi</u> (ἐπαρχιών)	BZS.1958.106.682	Zacos and Vegler, <i>Byzantine Lead Seals</i> , no. 245, and Corrigenda et Addenda, 1955 (see no. 245, giving the correct date), and <i>DOSeals</i> 3, no. 86.37. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 554, no. 215, and C. Malatras, “The Thema of the Anatolikoi: Prosopography and Administrative Structure,” in Karagiorgou, Charalampakis, and Malatras, <i>TAKTIKON</i> , 277–401, 372, 375 (TAKTIKON_ANAT_46)
		Paris, Bibliothèque nationale de France (Zacos) 740	Cheyne, “Quelques nouveaux sceaux de commerciaux,” no. 12; Malatras, “Anatolikoi” 372, 388 (TAKTIKON_ANAT_241)

Table 2. *continued*

Date (ind.)	Imperial Kommerkia of . . .	Present Location	References
734/5 (3)	Krateia, Prouusias, and Herakleia	St. Petersburg, Hermitage M-8024	N. P. Lihačev, "Datirovannye vizantijskie pechaty," <i>Izvestija Rossijskoj akademii material'noj kul'tury</i> 3 (1924): 153–224, 198–99, no. 9, table XII.6; N. P. Lihačev, <i>Molivdovuly grecheskogo Vostoka</i> , ed. V. S. Šandrovskaja, Naučnoe nasledie 19 (Moscow, 1991), 240–41, table LXXV.4; and Zacos and Veglery, <i>Byzantine Lead Seals</i> , 192 (table 34, n. 3). See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 554, no. 219
735/6 (4)	Kerassous	BZS.1955.1.4397	Zacos and Veglery, <i>Byzantine Lead Seals</i> , no. 250, and <i>DOSeals</i> 4, no. 34.2. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 555, no. 223
736/7 (5)	Lydia	Paris, Bibliothèque nationale de France (Zacos) 741	Zacos and Veglery, <i>Byzantine Lead Seals</i> , Corrigenda et Addenda, 1955 (see no. 251). See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 555, no. 227, and Cheynet, "Quelques nouveaux sceaux de commerciaux," no. 13
737/8 (6)	Asia and Karia	Private coll. Savvas Kofopoulos 1742 (Lesbos)	Montinaro, "Les premiers commerciaux byzantins," 371, n. 45.10, and Cheynet, <i>Collection Savvas Kofopoulos</i> , no. 357
738/9 (7)	Asia and Karia	n/a (ex-Zacos coll.)	Spink, <i>Zacos</i> , no. 15. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 556, no. 233a; (auction) Hirsch 237 (November 2004), no. 1017 = <i>SBS</i> 10 (2010): 169, no. 1017
		Gaziantep, Museum of Archaeology 18.5.76	J.-C. Cheynet, E. Erdoğan, and V. Prigent, "Les sceaux byzantins du Musée de Gaziantep," <i>REB</i> 78 (2020): 5–69, 17
738/9 (7)	Kerassous	St. Petersburg, Hermitage M-7973	Lihačev, "Datirovannye," 199, no. 10, table XII.7; Lihačev, <i>Molivdovuly</i> , 241–42, table LXXV.5; and Zacos and Veglery, <i>Byzantine Lead Seals</i> , 194 (table 34, n. 10), no. 250 (simple mention). See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 556, no. 230
739/40 (8)	Kibyrraiotai (στρατηγία)	Paris, Bibliothèque nationale de France (Zacos) 739	Zacos and Veglery, <i>Byzantine Lead Seals</i> , Corrigenda et Addenda, 1955 (see no. 261), and Cheynet, "La mise en place," 1–14, 9, no. 5. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 557, no. 234a; P. Charalampakis, "Towards a New Prosopographic Corpus of the Kibyrraiotai: Sources, Methods, Benefits," in Karagiorgou, Charalampakis, and Malatras, <i>TAKTIKON</i> , 515–600, 591 (TAKTIKON_KIB_125)
741/2 (10)	Thrakesioi (στρατηγία)	BZS.1951.315.1737	Zacos and Veglery, <i>Byzantine Lead Seals</i> , no. 261, and <i>DOSeals</i> 3, no. 231. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 557, no. 237
741/2 (10)	Hexapolis (Kato)	Brussels, Cabinet des médailles de la Bibliothèque royale	V. Tourneur, "L'Hexapolis arménienne au VII ^e siècle et au VIII ^e ," in <i>Mélanges Bidez: Annuaire de l'Institut de philologie et d'histoire orientales</i> , vol. 2 (Brussels, 1934), 947–52, and Zacos and Veglery, <i>Byzantine Lead Seals</i> , no. 260a. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 557, no. 236, and Karagiorgou, "Sigillographische Spuren"
741/2? (n/a)	Hexapolis (Kato)	n/a (ex-Zacos coll.)	Zacos and Veglery, <i>Byzantine Lead Seals</i> , no. 260b, and Spink, <i>Zacos</i> , no. 16. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 557, no. 236, and Karagiorgou, "Sigillographische Spuren"
742/3 (11)	Hellespontos, Asia, and Karia	Athens, Numismatic Museum BE 656/1996 (found on the islet of Arkadia, north of Melos, in the Cyclades)	I. Koltsida-Makre, "New Acquisitions of Byzantine Lead Seals in the Athens Numismatic Museum Collections," <i>SBS</i> 9 (2006): 11–22, 15–16, no. 5; Montinaro, "Les premiers commerciaux byzantins," 370, n. 45.1, 437, n. 225

Table 2. *continued*

Date (ind.)	Imperial Kommerkia of . . .	Present Location	References
744/5 (13)	Anatolikoi (στρατηγία)	Hierapolis, Hierapolis Archaeology Museum E 4203	N. Elam, “Thematic Molybdoboulla from the Collections of Eleven Archaeological Museums in Turkey,” in Karagiorgou, Charalampakis, and Malatras, <i>TAKTIKON</i> , 716–44, 718, no. 1. See also Malatras, “Anatolikoi,” 389 (TAKTIKON_ANAT_253)
744/5 (13)	Thrakesioi (στρατηγία)	Paris, Bibliothèque nationale de France (Zacos) 735	Cheyne, “La mise en place,” 9, no. 4
745/6 (14)	Opsikion (ἐπαρχιών)	BZS.1951.315.1741	Zacos and Vegler, <i>Byzantine Lead Seals</i> , no. 263, and <i>DOSeals</i> 3, no. 39.41. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 557, no. 239; C. Malatras, “At the Service of the Imperial Opsikion: The <i>Corpus</i> of the Officials,” in Karagiorgou, Charalampakis, and Malatras, <i>TAKTIKON</i> , 401–512, 488, 493 (TAKTIKON_OPS_51)
		St. Petersburg, Hermitage M-12.456 (found in Sougdaia/Sudak)	V. Šandrovskaja, “Die Funde der byzantinischen Bleisiegel in Sudak,” <i>SBS</i> 3 (1993): 85–98, 89, and Malatras, “Opsikion,” 488, 496 (TAKTIKON_OPS_91)
		n/a (auction)	Classical Numismatic Group, E-auction 436, no. 742; Malatras, “Opsikion,” 488 and 508 (TAKTIKON_OPS_238)
745/6 (14)	Thrakesioi (στρατηγία)	Munich, Staatliche Münzsammlung 499	W. Seibt and M.-L. Zarnitz, <i>Das byzantinische Bleisiegel als Kunstwerk</i> (Vienna, 1997), 66–67, no. 1.3.8, and Cheynet, “La mise en place,” 8, no. 3. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 558, no. 240
747/8 (or 732/3) (1)	Anatolikoi	Geneva, Musée d’art et d’histoire CdN 44665 (acquired at Amorium, Fig. 2.4)	M. Campagnolo-Pothitou and J.-C. Cheynet, <i>Sceaux de la collection Georges Zacos au musée d’art et d’histoire de Genève</i> (Milan, 2016), no. 103, and Malatras, “Anatolikoi,” 372, 377 (TAKTIKON_ANAT_82)
748/9 (2)	Anatolikoi	Paris, Bibliothèque nationale de France (Zacos) 744	Cheyne, “Quelques nouveaux sceaux de commerciaux,” no. 11, and Malatras, “Anatolikoi,” 372, n. 128, 388 (TAKTIKON_ANAT_240)
755/6? or 770/1? (9?)	Asia	Sofia, National Institute of Archaeology with Museum 12	G. Schlumberger, “Sceaux byzantins inédits (Quatrième série) (1),” <i>REG</i> 13, fasc. 55 (1900): 467–92, 469, no. 149; N. A. Mušmov, “Vizantijski olovni pečati ot sbirkata na Narodnija Muzej,” <i>Izvestija na Bălgarskija arheologičeski Institut</i> 8 (1934–1935): 331–91, 335, no. 5, fig. 190.8; Lihacëv, “Datirovannye,” 203; and Zacos and Vegler, <i>Byzantine Lead Seals</i> , 166 (table 19, n. 8), 196 (table 34, n. 17). See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 559, no. 252, and I. Jordanov, <i>Corpus of Byzantine Seals from Bulgaria</i> , vol. 1, <i>Byzantine Seals with Geographical Names</i> (Sofia, 2003), no. 12.2
756/7 or 771/2 (10)	Nicaea, Christoupolis (?) and . . .	Paris, Bibliothèque nationale de France (Zacos) 729	Cheyne, “Quelques nouveaux sceaux de commerciaux,” no. 18

Table 2. *continued*

Date (ind.)	Imperial Kommerkia of . . .	Present Location	References
758/9 (12)	<u>Anatolikoi</u>	Munich, Staatliche Münzsammlung 23	Seibt and Zarnitz, <i>Kunstwerk</i> , no. 1.3.9. See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 560, no. 254, Karagiorgou, “Yet Another <i>TAKTIKON</i> ,” 76, and Malatras, “Anatolikoi,” 372, 383 (TAKTIKON_ANAT_167)
760/1 (14)	<u>Anatolikoi</u>	n/a (auction)	Auction Gorny, München 82 (29.4.1997), no. 423, and Peter Schreiner and Cordula Scholz, “Bibliographische Notizen und Mitteilungen: Nachträge zu den Jahrgängen 89 (1996) und 90 (1997),” <i>BZ</i> 89–90, Supplementum Bibliographicum 3 (1998): 135, no. 1375 (Seibt). See also Brandes, <i>Finanzverwaltung in Krisenzeiten</i> , 560, no. 255; Karagiorgou, “Yet Another <i>TAKTIKON</i> ,” 76; and Malatras, “Anatolikoi,” 372, 381 (TAKTIKON_ANAT_138)
776 (14)	<u>Anatolikoi</u>	Munich, Staatliche Münzsammlung 618	Seibt and Zarnitz, <i>Kunstwerk</i> , no. 1.3.10, and Malatras, “Anatolikoi,” 372, 383 (TAKTIKON_ANAT_168)

Table 2 also shows that within the catalogue of attested seals of imperial kommerkia associated with Asia Minor (forty specimens in total), the Anatolikoi (in contrast to other areas) have not only a prominent position but also the most lasting presence (from 734/5 up to 776). This is not surprising if we bear in mind that the Anatolikoi was one of the largest and most important armies of the empire. The recently published results of the *TAKTIKON* Research Project on the prosopography and administrative structure of three of the earliest (and largest) themes in Asia Minor (the Opsikion, the Anatolikoi, and the Kibyrraiotai) have offered further tangible support to the prominence of the Anatolikoi in comparison to the other two Asia Minor themes: the Anatolikoi have the highest recorded number of officials (227) and molybdoboulla (360), as well as the highest number and variety of recorded offices (twenty-six) in the military and civil sectors.¹³⁴ Thus, it is of no surprise that the office of the strategos of the

Anatolikoi was often a stepping stone to higher offices, such as (in the tenth century) the domestic of the scholai (the highest military command of the empire) and, above all, that of the emperor itself.¹³⁵

More specific data on the exact numbers of the army of the Anatolikoi would have been a very welcome addition to our discussion here, since the pressure that any army corps exercises on the local resources for their provisioning is directly proportional to their size. The question, however, of the exact numbers of the Byzantine army in any given period remains one of the most debated issues.¹³⁶ The number of soldiers in the Anatolikoi could have even risen to 25,000 in the seventh century, according to a recent assessment by Haldon.¹³⁷

Apart from the size of the army of the Anatolikoi, it is worth considering another serious possibility that would have almost certainly doubled the amount of the military presence in Central Anatolia in the seventh and eighth centuries and subsequently the requirements for

134 For a comparison of the attested officials, molybdoboulla, and offices in the Opsikion, Anatolikoi, and Kibyrraiotai, see O. Karagiorgou, “Yet Another *TAKTIKON*,” in *TAKTIKON: Studies on the Prosopography and Administration of the Byzantine Themata*, ed. O. Karagiorgou, P. Charalampakis, and C. Malatras (Athens, 2021), 83, fig. 4, 100–101, fig. 13. For a detailed study on the prosopography and administrative structure of the Anatolikoi under the principles of the *TAKTIKON* Research Project, see C. Malatras, “The Thema of the Anatolikoi: Prosopography and Administrative Structure,” in *TAKTIKON*, 277–401, esp. appendix 2 (a chronological list of the officials active in the various administrative sectors in the Anatolikoi).

135 Among the eighty-two strategoi of the Anatolikoi recorded in *TAKTIKON*, six ascended the imperial throne (in chronological order): Leontios (695–698), Leo III the Isaurian (717–741), Leon V the Armenian (813–820), Nikephoros Phokas (963–969), Ioannes Tzimiskes (969–976), and Nikephoros Botaneiates (1071–1078).

136 Haldon, *Warfare, State, and Society in the Byzantine World*, 101–3, 107–15.

137 Haldon, *The Empire That Would Not Die*, 266–75, map 7.1; see also J. F. Haldon, *Byzantium in the Seventh Century: The Transformation of a Culture*, rev. ed. (Cambridge, 1997), 251–53.

its subsistence (including provisions in wine). Ralph-Johannes Lilie has argued that the military command of Thrakesion had been established before 680 and that the reference to the *tracisianus* army in the royal *iussio* that Justinian II addressed to Pope Ioannes V in February 687 in confirmation of the acts of the council of 680–681 refers in fact to this division.¹³⁸ This thesis raised several objections, but in one of his latest studies, Haldon addresses this question again, offering further arguments in support of Lilie's theory.¹³⁹ According to Haldon, the Thracian field army (the *magister militum per Thracias*) had been in Anatolia since the 630s/early 640s, certainly fighting the Arabs in the eastern theater where extra military force must have been much needed after the disaster at Yarmuk in 636. Thereafter, the Thracian field army was permanently allocated across Anatolia, retaining its formal name (*tracisianus*) and its ranking in the hierarchy. The main reason for this development (apart from the crucially defensive role of these troops) was the requirement to supply and quarter the soldiers. Before the 630s, the *magister militum per Thracias* was located behind the Danube frontier (in Moesia II and Scythia). However, after the 640s, the areas south of the Danube were no longer under safe imperial control and, above all, they were unable to sustain such a large field army.

At this point, it is worth remembering that armies, along with their officers, played a key role not only against the foreign threat of the Arabs but also in the internal strife of the mid-eighth century. Next to the imperial *kommerkia* of the Anatolikoi, it is the imperial *kommerkia* of the (*strategia* of the) Thrakesioi that feature quite prominently in the eighth century (see Table 2, in 741/2, 744/5 and 745/6). The Thrakesians and the Anatolikoi provided the main support to Constantine V against his brother-in-law, Artabasdos, who usurped the throne of Constantinople from June 742 to November 744. Indiction 741/2 would then correspond to the

preparations for the civil war and that of 744/5 to the siege of Constantinople by Constantine.¹⁴⁰ It is only reasonable to assume that, while Artabasdos occupied Constantinople, Constantine V must have sought refuge in one of the important urban centers in the areas that supported him (and most probably at Amorium).¹⁴¹ Thus, Amorium may very well have acted (even if occasionally) as the headquarters for his counteroffensive. Under these circumstances, the imperial concern for the sufficient provisioning of its armed forces would have been constant. Furthermore, if Amorium had become the temporary base of exiled emperors or claimants to the imperial throne, then the pressure on local resources (including the production of good wine needed for the imperial retinue) must have been far more intense.

It is under these contemporary realities, therefore, that we could explain the construction of intra muros wine-making installations at Amorium and the much-needed increase in the production of wine. Consequently, we may reasonably assume that the process of “conscious decision to sacrifice valuable urban space and undertake a great financial commitment for the creation and especially the maintenance of both wineries and vineyards,” as described above, mirrors a centrally orchestrated act of “compulsory purchase” as part of an overall devised plan on behalf of the Byzantine government to support the exceptionally large forces that were settled in Central Anatolia from 650 onward. Consequently, it became necessary to maximize local produce, especially the kind that was directly necessary for the well-being of these troops and the sustainability of their fighting force (and wine was certainly among them).¹⁴²

A final point needs to be discussed. If the institution of the imperial *kommerkia* was primarily destined to cover the needs of the armed forces, why do seals of the imperial *kommerkia* associated with the Kibyrraiotai (last attested in 739/40), the Opsikion (last attested in 745/6), and the Anatolikoi (last attested in 776; Fig. 24) gradually cease to exist after the 740s? We believe that this fact does not relate to the volume of evidence that has survived to our days but rather to a slow, but deep,

138 R.-J. Lilie, “‘Thrakien’ und ‘Thrakesion’: Zur byzantinischen Provinzorganisation am Ende des 7. Jahrhunderts,” *JÖB* 26 (1977): 7–47. Recently, Efi Ragia argued that the *tracisianus* army in the royal *iussio* of Justinian II refers in fact to the theme of Thrakesion, whose creation she places under Justinian II, in 687 or a little later; see Ragia, “Geography of the Provincial Administration,” 213.

139 J. Haldon, “Thrace, Thrakesion and Hellas,” in *Constantinople: Queen of Cities; Papers Dedicated to Paul Magdalino*, ed. D. Smythe and S. Tougher (Leiden, forthcoming). We are grateful to John Haldon for sharing with us his unpublished manuscript.

140 J.-C. Cheynet, “La mise en place des thèmes d’après les sceaux: Les stratégies,” *SBS* 10 (2010): 10.

141 K. Belke, *Tabula Imperii Byzantini*, vol. 4, *Galatien und Lykaonien* (Vienna, 1984; repr. Vienna, 2004), 123.

142 Haldon, *The Empire That Would Not Die*, 275–82.

Fig. 24.

Lead seal of the imperial *kommerkia* of the Anatolikoi, ind. 1 (732/3 or 747/8), acquired at Amorium. Obverse: half-length portraits of Emperor Leo III (left) and his son Constantine V (right); reverse: inscription in seven lines with an indiction date in the last line: Τῶν βασιλικῶν κομμερκίων τῶν Ἀνατολικῶν. Ind. A' ([Seal of] the imperial *kommerkia* of the Anatolikoi. Indiction 1). Geneva, Musée d'art et d'histoire, inv. no. CdN 44665. Donated by Jean Romieux, 1942; photographed by B. Jacot-Descombes.



institutional change. As Brandes has rightly noted, around 730/1, when the institution of the imperial *kommerkia* was introduced, “the geographical distribution of the *apothekai* changed in favour of the European areas.”¹⁴³ This observation is confirmed by the sigillographic corpus of the imperial *kommerkia* that we have recently compiled, where only twenty-four of the 119 relevant seals (20.16 percent) are associated with areas far from the western Asia Minor littoral, the Black Sea coast, and Europe, while after 773/4, the imperial *kommerkia* of Thessaloniki and Thrace dominate.¹⁴⁴ The fact that after about the 760s the imperial *kommerkia* are not associated anymore with the old late Roman provinces (Asia, Karia, Lydia, etc.) or large military units (e.g., Opsikion, Anatolikoi, etc.), but with coastal areas and important port cities (Mesembria, Thessaloniki, Debeltos) clearly indicates, in our view, their detachment from the management of products exclusively (or also) for the supply of the army and their gradual link to the general import and export trade of the empire. This change occurred probably in parallel to the gradual introduction of the thematic system (hence the gradual abandonment of the nomenclature of the old late Roman provinces) and the providence in it of other (now thematic) mechanisms and officials responsible for the provisioning of the army. In other words, although the institution of imperial *kommerkia* maintained the same name during its centennial life, its role and activities (and possibly also its structure) changed as they adapted to contemporary economic and fiscal requirements.

143 Brandes, *Finanzverwaltung in Krisenzeiten*, 305.

144 Karagiorgou, “Sigillographische Spuren.”

Amorian Wines and the Army

The connection between wine and its rationing and consumption in the Roman army has long been established.¹⁴⁵ Wine was also a staple drink for the soldiers of the Early Byzantine military, and it was provided regularly to them as rations. We can observe this process in numerous documents dating up to the seventh century from Egypt, where a daily ration of approximately 1 to 2 *sextarii*/ξέστες was the rule.¹⁴⁶ A sextarius equals 0.546 liters, according to the most common metrological calculations; thus, the daily ration of wine to Early Byzantine soldiers would have been between 0.5 and 1 liter (thus approximately equivalent to a modern bottle of wine per day).¹⁴⁷ It is not clear if this is a quantity to be consumed or whether part of it could be sold for income, as the figures seem quite high. In the Middle Byzantine period, rationing of wine to soldiers most probably continued as is indicated in different military manuals.¹⁴⁸ In these sources, we can observe that before or during the military operations special arrangements were made in order for wine to be

145 R. W. Davies, “The Roman Military Diet,” *Britannia* 2 (1971): 124–25, and J. P. Roth, *The Logistics of the Roman Army at War (264 B.C.–A.D. 235)* (Leiden, 1999), 14–16, 53–55.

146 Hickey, *Wine, Wealth, and the State in Late Antique Egypt*, 111–29, with further discussion and full bibliography.

147 Hickey, *Wine, Wealth, and the State in Late Antique Egypt*, 194.

148 For information contained in Leo VI’s *Sylloge Tacticorum* and *Taktika*, see S. Wierzbński, “The Burden, the Craving, the Tool: The Provisioning of the 10th Century Byzantine Army in the Light of Leo’s *Tactica* and *Sylloge Tacticorum*,” *Studia Ceranea* 10 (2020): 477.

procured for the use of the army on campaign.¹⁴⁹ Based on such texts, Lucas McMahon recently calculated a much lower daily wine ration for the soldiers of the tenth-century Byzantine army that reconquered Crete, amounting to 0.27 liters every third day (or half a bottle of wine every three days).¹⁵⁰

By proxy, we can use this low Middle Byzantine ration to calculate the possible needs in wine of the thematic army of the Anatolikoi based in and around Amorium. To do this, we estimate the power of the army of the Anatolikoi at any given time in the seventh to ninth centuries at approximately 20,000 troops. This equals to an annual quantity around 660,000 liters of wine needed solely for the army of the Anatolikoi according to this moderate estimate.¹⁵¹

Of course, this modeling is highly hypothetical, and a great number of variants could affect it (e.g., the true quantity rationed, the number of soldiers, their actual base of operation, and the projected period of time of their expedition), and thus it should be regarded only as indicative of the magnitudes of wine needed. Since moving supplies for the army was an onerous task, especially overland, as in the case of landlocked Amorium, it would have been logical for the state to ensure that much of the needed foodstuff

was produced locally.¹⁵² In this way, investing in the creation and upkeep of a robust local wine industry in seventh- and eighth-century Amorium at a scale unseen ever before in order to serve the needs of the army of the Anatolikoi newly stationed there seems to be a plausible explanation for the archaeological finds from the city. After all, focused wine production in Amorium was an investment materialized exactly at the moment when wine production in the Levant spirals down and wine from these areas almost disappears for the Byzantines with the expansion of Islam.¹⁵³

More detailed information concerning wine provision for the army during campaigns and possible connections to the situation at Amorium can be found in a treatise on imperial military expeditions, which reflects realities of the eighth and ninth centuries.¹⁵⁴ According to this text, when the emperor was on a campaign in Syria, the *domestikos* of the household service had to transport with him “one hundred measures of vintage Nicaean wine in skins (εἰς ἄσκοις οἶνον Νικαῖνόν παλαιόν).” Moreover, the imperial wine server had to secure “sufficient imperial wine (οἰνάρην δεσποτικόν),” while all the rest “ought to be drawn from the supplies of the *protonotarioi*.”¹⁵⁵ In another part of the *Treatise*, it is also mentioned that the emperor and his army, when marching overland from Constantinople to Syria, were expected to consume local wines (ἐγχώριος οἶνος) provided by the *protonotarioi*.¹⁵⁶ These wines were obtained in two distinct qualities: the good wine (καλὸς οἶνος), which was served to the emperor and his courtiers, and the ordinary common wine, which was destined for the main bulk of the army. The good wine

149 On Early Byzantine and possibly Middle Byzantine rations, see J. Haldon, “The Organisation and Support of an Expeditionary Force: Manpower and Logistics in the Middle Byzantine Period,” *Τὸ ἐμπόλεμο Βυζάντιο (9ος–12ος αἰ.) / Byzantium at War (9th–12th c.)*, ed. K. Tsiknakis (Athens, 1997), 124; J. Haldon, “Feeding the Army: Food and Transport in Byzantium, ca 600–1100,” in *Feast, Fast or Famine: Food and Drink in Byzantium*, ed. W. Mayer and S. Trzcionka (Brisbane, 2005), 86; J. Haldon, “Roads and Communications in the Byzantine Empire: Wagons, Horses, and Supplies,” in *Logistics of Warfare in the Age of the Crusades: Proceedings of a Workshop Held at the Centre for Medieval Studies, University of Sydney, 30 September to 4 October 2002*, ed. J. H. Pryor (Aldershot, 2006), 147–48; Wierzbinski, “The Burden, the Craving, the Tool”; and L. McMahon, “Logistical Modelling of a Sea-Borne Expedition in the Mediterranean: The Case of the Byzantine Invasion of Crete in AD 960,” *Mediterranean Historical Review* 36.1 (2021): 74–76. For a table that gathers examples of regulation rations including wine, see C. Morrisson and J.-C. Cheynet, “Prices and Wages in the Byzantine World,” in Laiou, *The Economic History of Byzantium*, 870–71, table 20.

150 McMahon, “Logistical Modelling,” 77.

151 A similar effort of quantification of the needs of the 20,000 Roman legionaries and auxiliaries serving in second-century Galatia established that their monthly need in wine would be around 327,000 liters; see J. Bennett, “Agricultural Strategies and the Roman Military in Central Anatolia during the Early Imperial Period,” *Olba* 21 (2013): 325.

152 On the cost of transporting and “packaging” goods, see McCormick, “Movements and Markets.”

153 Fuks et al., “Rise and Fall of Viticulture,” 19780–91.

154 Constantine VII Porphyrogenitus, *Treatise (C)*, lines 1–884 (Haldon, *Three Treatises*, 94–151), and Anagnostakis, *Βυζαντινός οἰνικός πολιτισμός*, 51–57. Generally on the organization of army logistics, see Haldon, “Organisation and Support,” 118–19.

155 Constantine VII Porphyrogenitus, *Treatise (C)*, lines 599–604 (Haldon, *Three Treatises*, 132–33): “the head of the table and the domestikos of the household service ought to transport the imperial table-service; and when the emperor is in Syria, of course, 100 measures of vintage Nicaean wine in skins; and 30 measures of Nicaean oil; and the imperial wine-server (should bring) sufficient imperial wine. All the rest of the provisions ought to be drawn from the supplies of the *protonotarioi*, that is from Romania.”

156 Constantine VII Porphyrogenitus, *Treatise (C)*, lines 136–54 (Haldon, *Three Treatises*, 102–4, and commentary, 200–203).

was also to be supplemented locally during the army's march wherever it could be found, since the original supplies were rapidly depleted.¹⁵⁷

How could local Amorion wine production and the presence of the thematic army of the Anatolikai fit in this picture? We can make the reasonable assumption that the Amorion wine was one of the local wines (ἐγχώριος οἶνος) prepared for the army or mustered in the process of the campaign. In this way, local production could both cover (or supplement) the needs of the permanently stationed garrisons and the much greater needs for expeditionary forces.

As a provincial center, Amorium had a constant presence of military and administrative dignitaries of some status, while also occasionally being visited by individuals directly connected to the imperial throne. So, it is worth examining the possibility that, besides lower-quality local wine (ἐγχώριος οἶνος), the city could have also produced high-quality wine (καλὸς οἶνος) that was reserved for the military elite, the imperial court, or even the campaigning emperor himself. In Middle Byzantine sources, this good wine is synonymous with the wine of Bithynia (or of Nicaea), a special red vintage probably made from sun-dried grapes being also "flower-scented."¹⁵⁸

Army officials, aristocrats, and occasionally members of the court might not have been the only ones interested in sweet wine from sun-dried grapes in Amorium. According to the *Chronicles* of both Theophanes Continuatus and Genesios, the city was the homeplace of a sizable Jewish community in the eighth and ninth centuries.¹⁵⁹ Jewish communities

made extensive use of this type of sweet wine for everyday and religious practices, thus making them a possible additional clientele, and one with special rules for both production and consumption.¹⁶⁰

Discussion about the quality of wine produced in the Amorium wineries remains largely speculative, but it is still worth attempting a synthesis based on the little evidence and comparable information. Residue analysis of Amorium winery tank samples suggests the possibility that part of the wine produced at Amorium could have been red, based on chemical signature, although this approach to identifying wine color can be far from certain.¹⁶¹ There is no known tradition, though, of eponymous wines connected with the region of Amorium, such as we know for Bithynia and other areas of Asia Minor.¹⁶² Pliny in his *Naturalis historia* mentions that Galatia produced a sweet wine called *Scybelites*.¹⁶³ This reference has been broadly reproduced in modern literature, but it should be treated with caution since all Greek textual sources up to the ninth century consider Scybelites a "Pamphylian wine."¹⁶⁴ Thus, ancient Scybela should be placed in

157 Constantine VII Porphyrogenitus, *Treatise (C)*, lines 150–51 (Haldon, *Three Treatises*, 102–4).

158 Anagnostakis, *Βυζαντινός οινικός πολιτισμός*, 59–65, and I. Anagnostakis, "The Sweet Wine of Bithynia in the Byzantine Era," in *Of Vines and Wines: The Production and Consumption of Wine in Anatolian Civilizations through the Ages*, ed. L. Thys-Şenocak (Leuven, 2017), 93–117; for *anthosmias*, a floral wine scented by the *anthos*, i.e., the froth or scum produced on the surface of the wine in the vats or wine jars, see Anagnostakis, "Noms de vignes et de raisins," 56, n. 66.

159 *Theophanes Continuatus*, II.3 (M. Featherstone and J. Signes Codoñer, eds., *Chronographiae quae Theophanis Continuati nomine fertur Libri I–IV*, CFHB 53 [Berlin, 2015], 66); Joseph Genesios, *Basileion*, III.13 (A. Lesmueller-Werner and H. Thurn, *Iosephi Genesii regum libri quattuor*, CFHB 14 [Berlin, 1978], 46); J. Starr, "An Eastern Christian Sect: The Athinganoi," *HTR* 29.2 (1936): 93–106; J. Starr, *The Jews in the Byzantine Empire, 641–1204*, 2nd ed. (New York, 1970), 98–99, 109; A. Sharf, *Jews and Other Minorities in Byzantium*

(Ramat Gan, 1995), 61–62; E. Ivison, "Kirche und religiöses Leben im byzantinischen Amorium," in Daim and Drauschke, *Byzanz – das Römerreich im Mittelalter*, 325–26; and P. Gardette, "The Judaizing Christians of Byzantium: An Objectionable Form of Spirituality," *Jews in Byzantium: Dialectics of Minority and Majority Cultures*, ed. R. Bonfil et al. (Leiden, 2012), 591–95.

160 Dodd, *Roman and Late Antique Wine Production*, 62–63. For more on the kosher wine used by Jewish communities in the Middle Ages, see B. Arbel, "The 'Jewish Wine' of Crete," in *Μονεμβάσιος οίνος – Μονοβασ(ι)α – Malvasis/Monemvasian Wine – Monovas(i)a – Malvasia*, ed. I. Anagnostakis, *Οἶνον ἱστορῶ* 5 (Athens, 2008), 82.

161 L. Drieu et al., "Is It Possible to Identify Ancient Wine Production Using Biomolecular Approaches?," *STAR: Science & Technology of Archaeological Research* 6.1 (2020): 16–29.

162 For the tradition of the sweet wines of Bithynia, see Anagnostakis, "Sweet Wine of Bithynia," and Anagnostakis and Boulay, "Les grands vignobles bithyniens," 25–49.

163 Pliny the Elder, *Naturalis historia* 14.80 (H. Rackham, ed. and trans., *Pliny: Natural History*, vol. 4, *Libri XII–XVI*, Loeb 370 [Cambridge, MA, 1945], 238–40).

164 Pliny's comment is reproduced in Gorny, "Viculture and Ancient Anatolia," 134, and A. Dalby, *Food in the Ancient World, from A to Z* (London, 2003), 296. For the Pamphylian origin of Scybelites, see Galen, *De victu attenuante* 98.2 (K. Kalbfleisch, ed., *Galen de victu attenuante*, *Corpus medicorum Graecorum* 5.4.2 [Leipzig, 1923]): ὁ ἀπὸ τῆς Παμφυλίας οἶνος ὁ καὶ Σκυβελίτης ὀνομαζόμενος (the wine from Pamphylia that is also named Scybelites).

Pamphylia and not in Central Anatolia.¹⁶⁵ Other areas in the interior of Asia Minor were known in antiquity for their wines, some of which were also used for therapeutic purposes.¹⁶⁶ For instance, Maeonia, in inland Lydia, produced the highly valued *Katakekaumenites* wine, and the region of Tmolos was famous for a wine extensively used in medical recipes together with other ingredients such as hellebore, saffron, and *akoron*.¹⁶⁷ The region of Kalecik/Malos at the eastern vicinity of Ankara in Galatia was well-known for its high-quality red wine that had a reputation for healing and well-being.¹⁶⁸ Moreover, the area around the city of Amblada, which Strabo places near the boundaries of Phrygia and Karia, produced wine that was exported and used for medicinal purposes.¹⁶⁹

Still, we can extract some indirect evidence that could be connected with special wine making in the area of Amorium during the Middle Ages. According to Arabic sources, one of the important substances obtained at Amorium by traveling Arab merchants was a plant called *al-vaj*.¹⁷⁰ This can be identified as sweet

flag (*Acorus calamus*, *akoron*, or aromatic reed), whose root was used for various medical and other purposes, or alternatively, but less possibly, as yellow flag (*Iris pseudacorus*).¹⁷¹ Dioscorides, a physician and writer from the first century CE, describes a plant similar to *Acorus* collected in Galatia and includes it in a formula for a therapeutic wine.¹⁷² Sweet flag was an expensive product that was used widely as an additive in wine during antiquity due to its therapeutic properties.¹⁷³ The same plant still grows in swampy areas next to lakes in Central Anatolia and is collected for various medicinal purposes.¹⁷⁴ Perhaps the sweet flag reportedly acquired by the Arabs at Amorium offers evidence for its continued collection and use in the early Middle Ages.¹⁷⁵

Ninth Century to the Arrival of the Crusaders" (PhD diss., Harvard University, 2008), 188–91.

171 It is mentioned as yellow flag by Durak, "Commerce and Networks of Exchange," 188, and as sweet flag by Lightfoot, "Business as Usual?," 188. Indeed, *haj* is one of the common Arabic names for sweet flag (*Acorus calamus*): T. J. Motley, "The Ethnobotany of Sweet Flag, *Acorus calamus* (Araceae)," *Economic Botany* 48.4 (1994): 397–412; S. Tibi, *The Medicinal Use of Opium in Ninth-Century Baghdad* (Leiden, 2006), 208 (where it is transcribed as *wajj*); N. Serikoff, "Syriac Plant Names in a Fifteenth Century Greek Glossary (From the Wellcome Library Books and Manuscripts)," in *Medical Books in the Byzantine World*, ed. B. Zipser (Bologna, 2013), 103 (the published catalogue suggests ἄκορον: ὀβέρτζ), 110, n. 34.

172 Dioscorides, *De materia medica* 1.2 (M. Wellmann, ed., *Pedanii Dioscuridis Anazarbei de materia medica libri quinque* [Berlin, 1907]), 1:1–7: ἄκορον τὰ μὲν φύλλα ἔχει ἐμπερὴ ἱριδι, . . . πλήρες εὐωδίας, τοιοῦτο δὲ ἐστὶ τὸ ἐν Κολχίδι καὶ τὸ ἐκ τῆς Γαλατίας (*akoron* has leaves that resemble the leaves of iris . . . full of scent. Such is the one in Colchis and that from Galatia [translation based on L. Y. Beck, trans., *Pedanius Dioscorides of Anazarbus: De materia medica* (Hildesheim, 2005), 7]). For the formula, see Rzeźnicka and Kokoszko, "Wine and Myrrh," 627, 638.

173 Rzeźnicka and Kokoszko, "Wine and Myrrh," 627, 632–33, 638. The authors note that the sweet flag used by Early Byzantine physicians and mentioned by Dioscorides was "the type imported from India" and not "today's ubiquitous European variety, since it was not brought to the region until sometime between the Middle Ages and the 16th century" (633).

174 A. Baytop, "Türkiye'de *Acorus calamus*/*Acorus calamus* in Turkey," *Journal of Faculty of Pharmacy or Ankara University* 9 (1979): 12–17, and Motley, "Ethnobotany of Sweet Flag," 403.

175 The study of archaeobotanical material from Amorium by John Giorgi revealed no presence of *Acorus calamus*: Lightfoot, "Business as Usual?," 188, and J. Giorgi, "The Plant Remains," in Lightfoot and Ivison, *Amorium Reports* 3, 395–418. However, we need to take into account that the plant grew some distance from the settlement, probably in the marshy areas of the Sangarius riverine system to the north of Amorium, and the plant material of interest is the rhizome that

165 Hesychius, *Lexicon*, s.v. Κέσκος (Ian Cunningham, ed., *Hesychii Alexandrini lexicon*, vol. 2, E–O, rev. ed. [Copenhagen, 2020]): . . . καὶ Σκυβελίτης οἶνος, ἀπὸ Σκυβελων, τόπου Παμφυλίας (. . . and the Scybelites wine, [that comes] from Scybela, a place in Pamphylia). According to Mitchell, *Anatolia*, 1:146–47, "[T]here need be no contradiction if Pliny was using a source which dated from the time when Pamphylia was in the province of Galatia."

166 Dalby, *Food in the Ancient World*, 30–31 (on Asian wines); S. Mitchell, "Food, Culture and Environment in Ancient Asia Minor," in *A Companion to Food in the Ancient World*, ed. J. Wilkins and R. Nadeau (Chichester, 2015), 285–95; and P. Komar, *Eastern Wines on Western Tables: Consumption, Trade and Economy in Ancient Italy* (Leiden, 2020), 16, 102–4. See also J. Jouanna, *Greek Medicine from Hippocrates to Galen: Selected Papers*, ed. P. van der Eijk, trans. N. Allies (Leiden, 2012), 173–94, and P. Komar, "In vino sanitas: Medical Qualities of Greek Wines," *Mélanges de l'École française de Rome – Antiquité* 132.2 (2020): 429–47.

167 A. Dalby, *Food in the Ancient World*, 30–31, 134, and Komar, *Eastern Wines on Western Tables*, 102. For the use of ingredients in the wine, see Z. Rzeźnicka and M. Kokoszko, "Wine and Myrrh as Medicaments or a Commentary on Some Aspects of Ancient and Byzantine Mediterranean Society," *Studia Ceranea* 9 (2019): 615–55.

168 Mitchell et al., "Church Building and Wine Making."

169 Strabo, *Geographica* 12.7.2 (A. Meineke, ed., *Strabonis geographica* [Leipzig, 1853], 2:800–801). On Dionysus's cult and the viticulture, vintage, and wines in Mysia, Pisidia, and Cappadocia, see Mitchell, "Food, Culture and Environment," 285–95, and especially on Amblada, 288–89.

170 K. Durak, "Commerce and Networks of Exchange between the Byzantine Empire and the Islamic Near East from the Early

Thus, it is possible that local wine production also could have carried on the ancient tradition of seasoning wine with aromatic herbs.

If so, this good wine (καλὸς οἶνος) would probably have been produced following the Bithynian method of making sweet straw wine, a technique dictating that the grapes should be dried in the sun before being trodden, and resulting in a heavy, deep red wine later aromatized by herbs like sweet flag.¹⁷⁶ Perhaps the parallel existence of treading floors and winepresses inside the city of Amorium could relate to the production of two different quality categories of wine. Certainly, Middle Byzantine wine tasters still held in high esteem the production of sophisticated and therapeutical wines, as shown by the tenth-century compilation of the *Geoponika*, which contains a large number of recipes and mentions the addition of spices and fragrances to the wine after its fermentation in order to enhance its taste and scent.¹⁷⁷

Wine (and wine vinegar) intended for army use must have also played an important role as a therapeutic medium for its mildly antiseptic, analgesic, and soporific qualities.¹⁷⁸ In a skirmish near Samarra in AD 363, the emperor Julian was wounded by a spear that pierced the lower lobe of his liver. He was treated by his personal physician, Oribasius of Pergamum, who, according to recent research, followed Hippocratic medical practice and treated Julian by irrigating his wound with dark wine, applying a procedure known as *gastrorrhaphy*.¹⁷⁹

would have left no easily discernible traces, while the rest of the plant along with the seeds would have been discarded at the harvesting location. See Motley, "Ethnobotany of Sweet Flag," 397–99; H. Fazal, N. Ahmad, and B. Haider Abbasi, "Identification, Characterization, and Palynology of High-Valued Medicinal Plants," *Scientific World Journal* (2013), <https://doi.org/10.1155/2013/283484>.

176 Anagnostakis, *Βυζαντινὸς οἰνικός πολιτισμός*, 59–63; Anagnostakis, "Sweet Wine of Bithynia"; and Anagnostakis and Boulay, "Les grands vignobles bithyniens." It was difficult to get all the juice from dried grapes only by treading; the use of heavy rollers or winepresses would have also been needed (D. Van Limbergen, "Changing Perspectives on Roller Presses in Late Antique Northern Syria," *Syria: Archéologie, art et histoire* 94 [2017]: 314–15).

177 See references to *Geoponika* by Rzeźnicka and Kokoszko, "Wine and Myrrh," 615–55, and Decker, *Tilling the Hateful Earth*, 136.

178 C. F. Salazar, *The Treatment of War Wounds in Graeco-Roman Antiquity* (Leiden, 2000), 63 (anesthetic), 66 (antiseptic).

179 J. Lascaratos and D. Voros, "Fatal Wounding of the Byzantine Emperor Julian the Apostate (361–363 A.D.): Approach to the Contribution of Ancient Surgery," *World Journal of Surgery* 24

Advice on using wine for its anesthetic and other qualities in military context is also provided in the tenth-century *Sylloge tacticorum*.¹⁸⁰ Sometimes wine could have offered an invigorating and hydrating boost to the army, as during the Battle of Dorostolon in midsummer of 971, when the soldiers were provided with flasks of wine and water by John Tzimiskes.¹⁸¹

The consumption of wine by the Byzantine military could also be a concern occasionally, especially when this became excessive and had negative effects on the discipline of the soldiers. Textual sources make references both to the care taken by the military officers to provide a constant supply of wine during the campaigns and to the disastrous consequences of drunkenness. Libanius mentions that, during Julian's Persian wars, when the emperor Julian saw "a large camel train, with one animal tied behind another and all loaded with supplies, this being composed of the finest wines from all over the world and all the devices people have discovered for the increased pleasure of wine drinking," he ordered his men to leave the supplies behind, saying, "Good soldiers . . . should drink the wine they won at sword point."¹⁸²

In another event in 533, the Byzantine fleet under Belisarios set sail from Constantinople to fight the Vandals. Five days later, the fleet anchored at Abydos, a fees station (*commercium*) with large warehouses

(2000): 615–19, and D. Potter, *Rome in the Ancient World: From Romulus to Justinian* (London, 2009), 288.

180 Wierzbński, "The Burden, the Craving, the Tool," 493.

181 John Skylitzes, *Synopsis*, Ioannes Tzimiskes 15 (H. Thurn, ed., *Ioannis Scylitzae Synopsis Historiarum*, CFHB 5 [Berlin, 1973], 306.49–50); G. Dennis, "The Byzantines in Battle," in Tsiknakis, *Τὸ ἐμπόλεμο Βυζάντιο*, 168; and S. McGrath, "The Battles of Dorostolon (971): Rhetoric and Reality," in *Peace and War in Byzantium: Essays in Honor of George T. Dennis, S.J.*, ed. T. S. Miller and J. Nesbitt (Washington, DC, 1995), 159.

182 Libanius, *Funeral Oration over Julian*, §216 (R. Foerster, ed., *Libanii opera*, vol. 4, *Orationes LI–LXIV* [Leipzig, 1908], oration XVIII, 330–31). For the English translation, see A. F. Norman, trans., *Libanius, Selected Works*, vol. 1, *Julianic Orations*, Loeb 451 (London, 1969), p. 425. It should be noted that Julian owned vineyards in Bithynia, producing a unique sweet wine similar to the imperial *despotikos* wine taken by the emperors in their campaigns. On Julian's vineyards in Bithynia, see J. Bidez, ed., *L'empereur Julien: Oeuvres complètes*, vol. 1.2, *Lettres et fragments* (Paris, 1924), epistle no. 4; Anagnostakis, *Βυζαντινὸς οἰνικός πολιτισμός*, 62; and Anagnostakis and Boulay, "Les grands vignobles bithyniens," 36–39.

(apothekai) of wine and oil.¹⁸³ During their stay there, the Massagetae, who, according to Procopius, were the most intemperate *akratopotes* (drinkers of unmixed wine) among all the soldiers, got drunk and killed one of their comrades. Belisarios punished them with impalement and gave a speech to the army, in which he made it clear that drunkenness “itself . . . is worthy of punishment” and that it would not be accepted.¹⁸⁴

Three centuries later, the Byzantine army faced more serious problems caused by alcohol abuse, according to a legendary interpretation by chronographs of a great disaster considered a divine punishment. This time it was during a campaign against the Bulgarians in the Balkans. Emperor Nikephoros I, who was leading the Byzantine army, succeeded in defeating Tsar Krum and sacked his capital.¹⁸⁵ In order to celebrate his victory, the emperor opened the cellars of the seized palace and distributed wine to his soldiers, who got drunk. After some days of feasting, the Byzantines burned the palace of the tsar to the ground and left the city, only to be attacked by the Bulgarians, who seized the opportunity to retaliate. The imperial army, perhaps also because of its inebriety all those days, was annihilated by the Bulgarians, and Nikephoros was killed, his skull, according to the legend, becoming the drinking cup of Krum.¹⁸⁶

183 On the Abydos tariff and wine, see V. Iacomi, “Some Notes on Late-Antique Oil and Wine Production in Rough Cilicia (Isauria) on the Light of Epigraphic Sources: Funerary Inscriptions from Korykos, LR 1 Amphorae Production in Elaiussa Sebaste and the Abydos Tariff,” in Aydınoglu and Şenol, *Olive Oil and Wine Production in Anatolia*, 19–32; more generally, see G. A. Leveniotis, *H Αβυδος του Ελληνισπόντου και η περιοχή της* (Thessaloniki, 2017).

184 Procopius, *History of the Wars* III.12.6–22 (H. B. Dewing, trans., *Procopius*, vol. 2, *History of the Wars, Books 3–4*, Loeb 81 [London, 1916], 112–17), and I. Anagnostakis, “Wine, Water, Bread, and Love Affairs on a Sixth-Century Military Campaign: Narrative Strategies, Politics and Historicity,” in *Homage to Tibor Živković*, ed. I. R. Cvijanović (Belgrade, 2016), 23–38.

185 I. S. Dujcev, “La chronique byzantine de l’an 811,” *TM* 1 (1965): 210–16, and Theophanes, *Chronographia*, AM 6303 (de Boor, *Theophanis Chronographia*, 1:489–91).

186 For an interpretation of the story in the light of the use of wine by the Byzantine army and the Byzantine legends of vines’ destruction and interdiction of wine, see I. Anagnostakis, “Η παροιμία των Βαλκανίων: Η μέθη του πολέμου και το ποτήρι του Κρούμου,” in *Τέχνη και τεχνική στα αμπέλια και στους οινώνες της Β. Ελλάδος: Θ’ Τριήμερο Εργασίας Αδριανή Δράμας*, 25–27 Ιουνίου 1999 (Athens, 2002), 138–67; see also P. Stephenson, “About the Emperor Nikephoros and How He Leaves His Bones in Bulgaria: A Context for the Controversial ‘Chronicle of 811,’” *DOP* 60 (2006): 88.

Maybe it was this kind of experience that caused Leo VI in his *Taktika* to counsel military officers that wine consumption by soldiers should be avoided during the hot summer months, along with other precautions for alleviating the possibility of heatstroke.¹⁸⁷

Conclusions

The typology and function of the wine-producing installations at Amorium fall neatly into the existing discussion and relevant typology, vastly expanding our understanding of the use of screw weight presses in the Transitional Period. The archaeological remains are highlighted even more by the precise dating offered by the systematic excavation, information that is usually missing for similar constructions in a Byzantine setting. Large parts of the urban settlement of the newly established thematic capital were repurposed and dedicated to the production of wine at an almost industrial scale. The wineries of Amorium were created during the seventh century and remained functioning until the early ninth century. They had been partially or entirely dismantled some years before the Arab destruction of the city in 838. No wine-producing installations have been discovered in the subsequent phase during the rebuilding of Amorium in the late ninth and early tenth century until its final abandonment by the Byzantines in the late eleventh century.

The relocation of large military units to the region of Amorium from the East and the creation of the thematic army of the Anatolikoi in the seventh century also signaled new realities for the settlement. One of these would be the need to sustain a large number of soldiers, administrative officers, skilled workmen, and professionals connected to the army.¹⁸⁸ It has been shown before, especially in Roman times, that the presence of large military units in certain marginal or

187 Leo VI, *Taktika*, §83 (G. T. Dennis, ed. and trans., *The Taktika of Leo VI*, CFHB 49 [Washington, DC, 2010], 336–37), and Wierzbński, “The Burden, the Craving, the Tool,” 494.

188 Useful analogies emerge from the study of the Apion estate in sixth-century Aphrodito in Egypt, where the usual allowance for military wine grows to an unforeseen measure when a new military unit, the *Scythae Iustininiani*, appears in the general area and needs to be provided for (Hickey, *Wine, Wealth, and the State in Late Antique Egypt*, 120–23).

noncentral areas could greatly affect the local economy.¹⁸⁹ Additionally, providing for the military in a landlocked base of operations like Amorium meant that there could only be limited reliability for imports for reasons of time and cost. Thus, an economy of scale regarding wine production must have developed locally, based partially on preexisting viticulture traditions but mainly due to large investment in the form of new mechanical wineries and the development of the respective vineyards.¹⁹⁰ The material remains of this new economic reality can be seen in the unearthed wine-producing installations of Amorium.

But, if the presence of the army can be associated with the construction of the winepresses in the middle of the seventh century, their abandonment some years before the destruction of 838, in a period when Amorium was still an important military hub and the base of the strategos of the Anatolikoi, remains an unanswered question. We can enumerate a number of reasons that could have contributed to this decline in wine production inside the walled city of Amorium from the ninth century on.

Firstly, we do not have palynological data from the broader area to investigate if there was any total reduction in viticulture at this time. However, paleoenvironmental evidence from all around Anatolia shows that in the middle of the eighth century the climatic conditions changed, creating increased dryness.¹⁹¹ This relatively

drier and colder period, which lasted until the beginning of the tenth century, could have influenced the agricultural regime of the area. The vine in particular is sensitive to both drought and frost. Spring frosts can destroy the annual grape harvest, whereas drought conditions affect the volume and quality of the wine production.¹⁹²

Moreover, apart from the change in the climate, during the eighth century, Amorium suffered multiple Arab raids, as we saw earlier. These attacks, which occurred mainly in the spring and summer, made the rural population abandon their villages. During this type of warfare, both the invaders and the defenders used to burn or uproot the crops. A vineyard destroyed either by the weather or by man takes five to seven years to bear fruit again.¹⁹³ Hard times or bad harvests mean instability in the supply chain and problems in the production of wine. This insecurity might have already played a role in the introduction of the high-value wineries inside the walled area in the seventh century.

The new realities of the ninth- and tenth-century Byzantine state with the expansion to both the east and west meant that the needs for wine could again be served by the traditional networks of production and distribution. The apotheker of Amorium was not a functioning institution anymore, so much of the logistic arrangements designed for the armies of the seventh and eighth centuries were not valid anymore. Also, Arab raids gradually diminished or entirely stopped after 838, and the Byzantines were on the offensive by that point. It would be logical in this phase for wine making to return to the countryside with no special care for it being conducted inside the safety offered by fortifications. It may also be that the consolidation of the frontier line further to the east meant that other areas closer to the frontier army,

189 “The presence of the Rhine armies sparked a demand that ultimately pushed wine production as far north as the Moselle banks” (K. S. Verboven, “Good for Business: The Roman Army and the Emergence of a ‘Business Class’ in the Northwestern Provinces of the Roman Empire [1st Century BCE–3rd Century CE],” in *The Impact of the Roman Army [200 BC–AD 476]: Economic, Social, Political, Religious, and Cultural Aspects: Proceedings of the Sixth Workshop of the International Network Impact of Empire [Roman Empire, 200 B.C.–A.D. 476], Capri, March 29–April 2, 2005*, ed. L. de Blois and E. Lo Cascio [Leiden, 2007], 295–313, at 307). At Roman Gordion, see C. Çakırlar and J. M. Marston, “Rural Agricultural Economies and Military Provisioning at Roman Gordion (Central Turkey),” *Environmental Archaeology* 24.1 (2019): 91–105, and Bennett, “Agricultural Strategies and the Roman Military,” 324–37.

190 It has been proposed that the Phrygian site of Hendek Kale near modern Uşak had been developed in late antiquity into a wine- or oil-producing center connected with the needs of locally stationed troops: Bennett and Claasz Cookson, “Hendek Kale,” and Bennett, “Agricultural Strategies and the Roman Military,” 327.

191 Haldon, “Remarks on History, Environment, and Climate in Byzantine Anatolia,” 9, and A. Izdebski et al., “The Environmental, Archaeological and Historical Evidence for Regional Climatic

Changes and Their Societal Impacts in the Eastern Mediterranean in Late Antiquity,” *Quaternary Science Reviews* 136 (2016): 192–98.

192 E. Xoplaki et al., “The Medieval Climate Anomaly and Byzantium: A Review of the Evidence on Climatic Fluctuations, Economic Performance and Societal Change,” *Quaternary Science Reviews* 136 (2016): 233, and D. Van Limbergen and W. De Clercq, “Viticulture as a Climate Proxy for the Roman World? Global Warming as a Comparative Framework for Interpreting the Ancient Source Material in Italy and the West (ca. 200 BC–200 AD),” in *Climate Change and Ancient Societies in Europe and the Near East: Diversity in Collapse and Resilience*, ed. P. Erdkamp, J. G. Manning, and K. Verboven (Cham, 2021), 468.

193 Gorny, “Viticulture and Ancient Anatolia,” 146, and Maniatis, “Byzantine Winemaking Industry,” 232.

such as Cappadocia, undertook a considerable portion of the production of wine for the military.¹⁹⁴

While viticulture and wine production marked the fortune and prosperity of early medieval Amorium, it is again a wine story that marks the city's destruction in 838. The famous Arabic long poem by Abū Tammām (d. 846) celebrating the triumph of Caliph al-Mu'taṣim records that the fall of the city happened just "before the ripening of figs and grapes" (verse 59).¹⁹⁵ Abū Tammām's verse responded to an astrological prediction prophesizing that the capture of Amorium would come only at the time when grapes and figs ripen, probably an allusion to the city being ripe for the taking.¹⁹⁶

194 Peker, "Agricultural Production."

195 M. M. Badawi, "The Function of Rhetoric in Medieval Arabic Poetry: Abū Tammām's Ode on Amorium," *Journal of Arabic Literature* 9.1 (1978): 50, and H. M. Hassan, "Το ποίημα του Αμπού Ταμμάμ και η άλωση του Αμορίου το 838 μ.Χ.," *Journal of Oriental and African Studies* 13 (2004): 45, 66.


196 Abū Bakr al-Ṣūlī, *The Life and Times of Abū Tammām*, ed. and trans. B. Gruendler (New York, 2015), 33, and Hassan, "Το ποίημα του Αμπού Ταμμάμ," 66.

Nikos Tsivikis
Institute for Mediterranean Studies,
FORTH
130 Nikiforou Foka Str. & Melissinou
74100 Rethymno
Crete
Greece
ntsivikis@ims.forth.gr

Thanasis Sotiriou
Institute for Mediterranean Studies,
FORTH
130 Nikiforou Foka Str. & Melissinou
74100 Rethymno
Crete
Greece
sotiriouthan@gmail.com

Olga Karagiorgou
Research Centre for Byzantine and
Postbyzantine Art
Academy of Athens
14 Anagnostopoulou Str.
10673 Athens
Greece
karagiorgou@academyofathens.gr

Ilias Anagnostakis
National Hellenic Research
Foundation
48 Vassileos Constantinou Ave.
11635 Athens
Greece
eanagno@eie.gr

 THIS RESEARCH HAS BEEN COFINANCED BY Greece and the European Union (European Social Fund [ESF]) through the operational program "Human Resources Development, Education and Lifelong Learning 2014–2020" in the context of the project "Wine-Producing Installations in Byzantine Asia Minor, 7th–9th c.: The Case of Amorion" (MIS 5050161) hosted by the Academy of Athens. Also important for the successful conclusion of our project was the support of Chrysa Maltezou, a member of the academy, and the personnel of the institution.

We would like to express our sincere appreciation to the Amorium Excavations Project and its director, Dr. Zeliha Demirel-Gökalp of Anadolu University, for her continuous support of our project and international collaborations in general. The Amorium excavations are supported by the Ministry of Culture and Tourism of the Republic of Türkiye, the Anadolu University Scientific Research Projects Commission, and the Turkish Historical Society. We are grateful to Christopher Lightfoot, former director of the Amorium Excavations Project, for providing access

to the archival and photographic material of the older excavation, for allowing us to consult his own personal notes on stone press weights and the residue analysis of the winepress mortar, both as yet unpublished, and for his careful and time-consuming revisions to this text. The assistance of Dr. Jamieson Donati with his research of the landscape around Amorium was

paramount, as was his editing of some of the maps presented here. A special thanks is owed to the anonymous reviewers, who offered ideas for crucial improvements of the text, and to the editor of *Dumbarton Oaks Papers*, who treated our text and its production with special care. All remaining errors are those of the authors themselves.